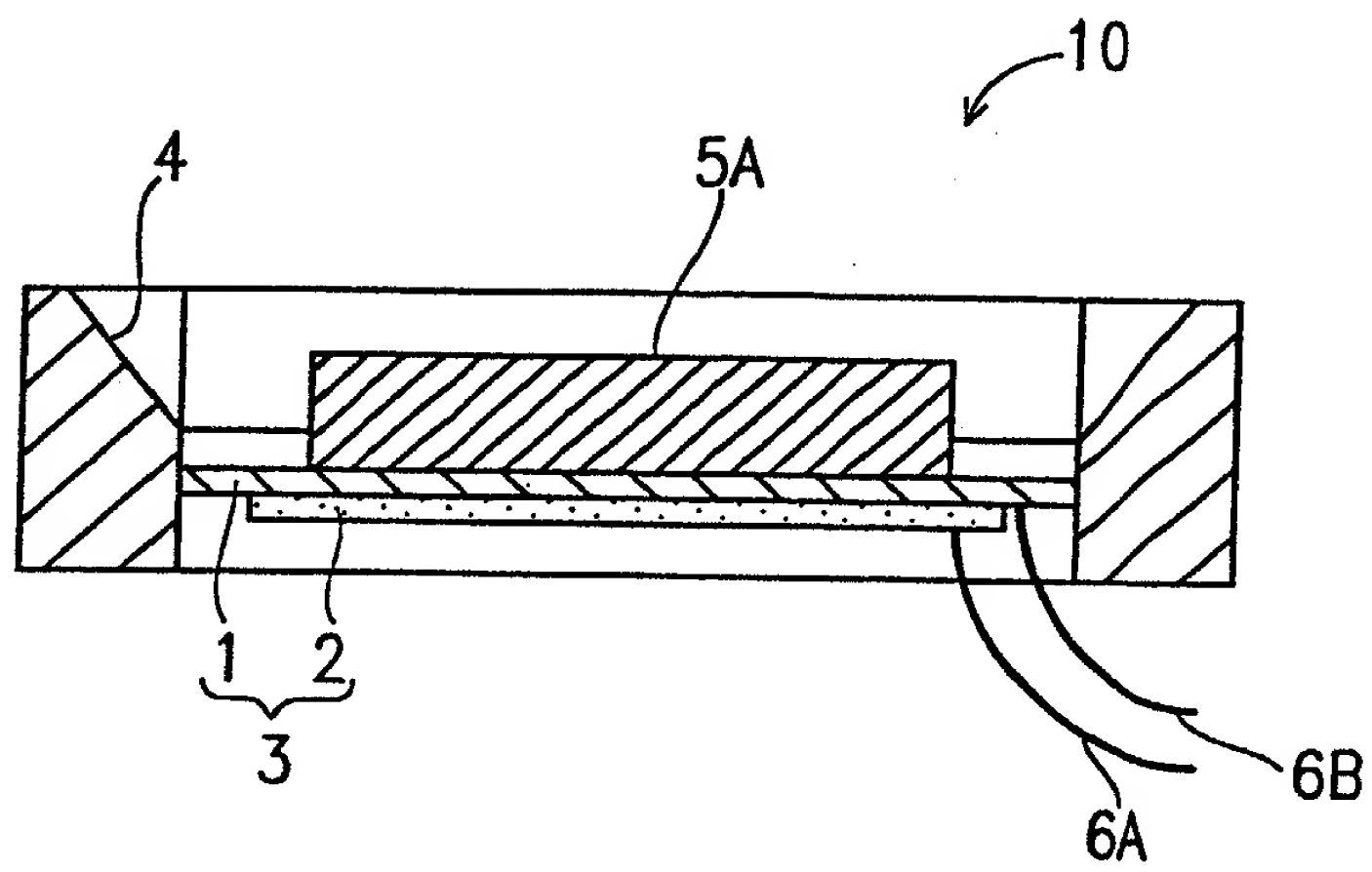
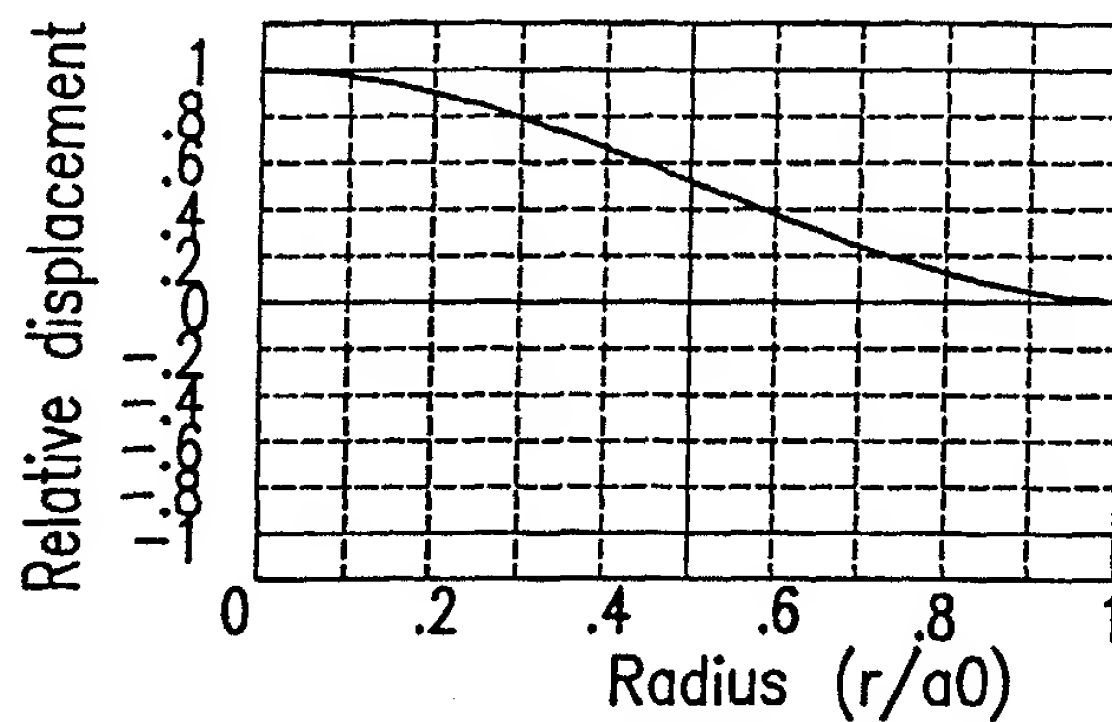
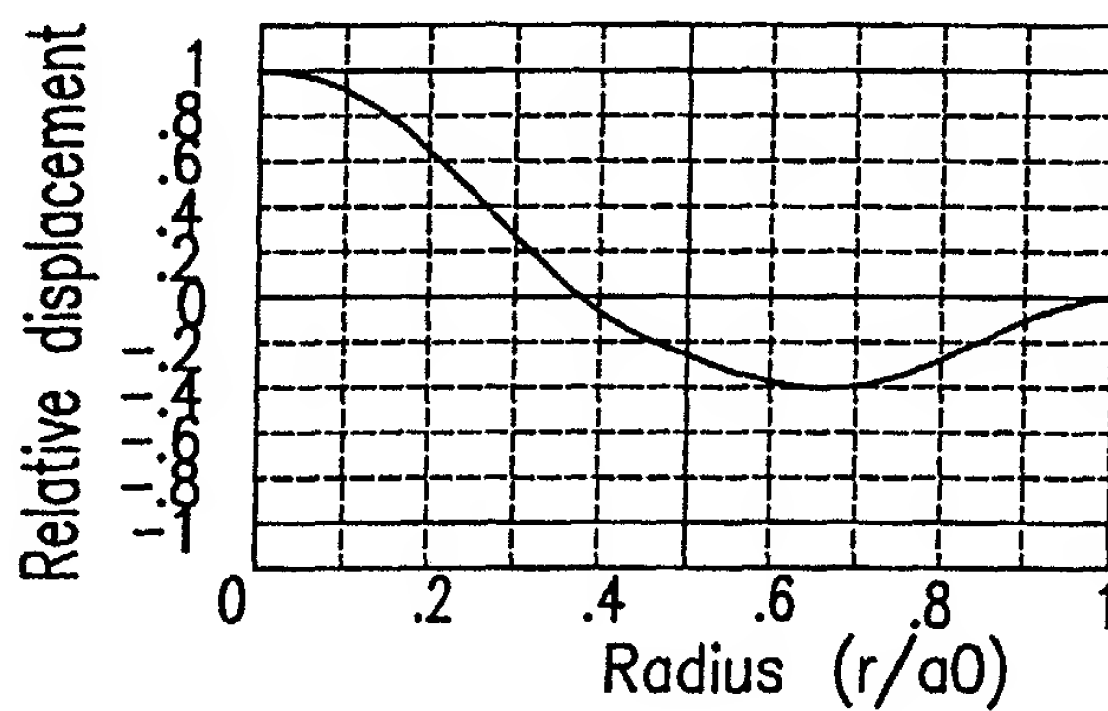


*FIG. 1*

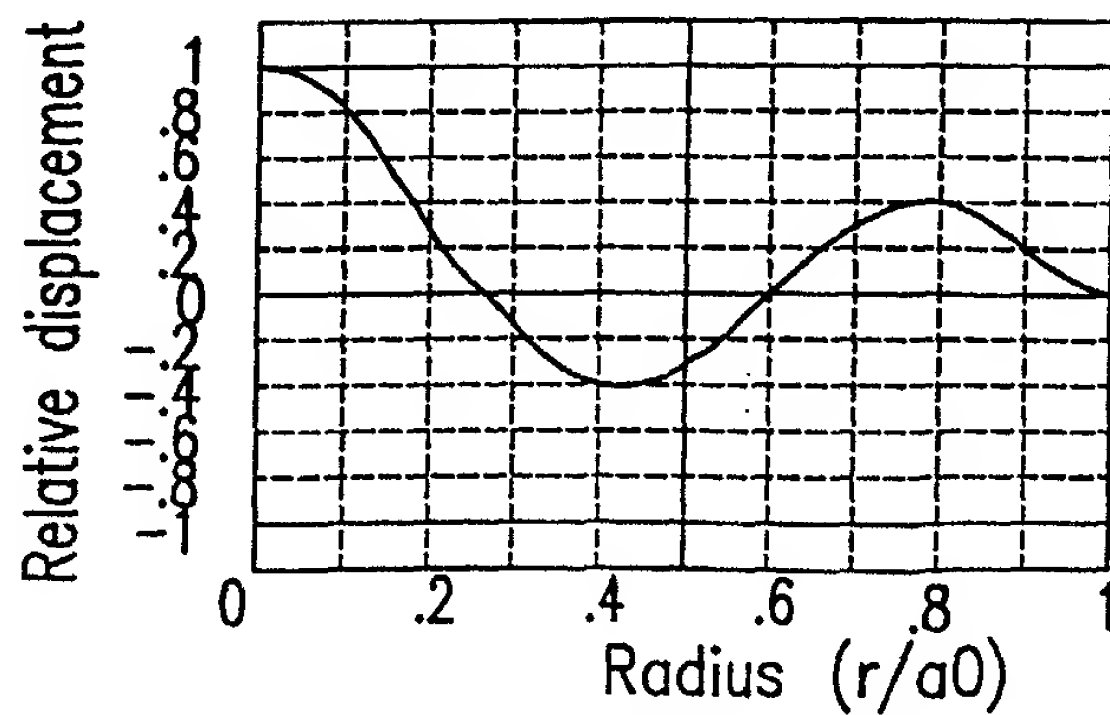


*FIG. 2A*

1st resonance mode

*FIG. 2B*

2nd resonance mode

*FIG. 2C*

3rd resonance mode

FIG. 2D

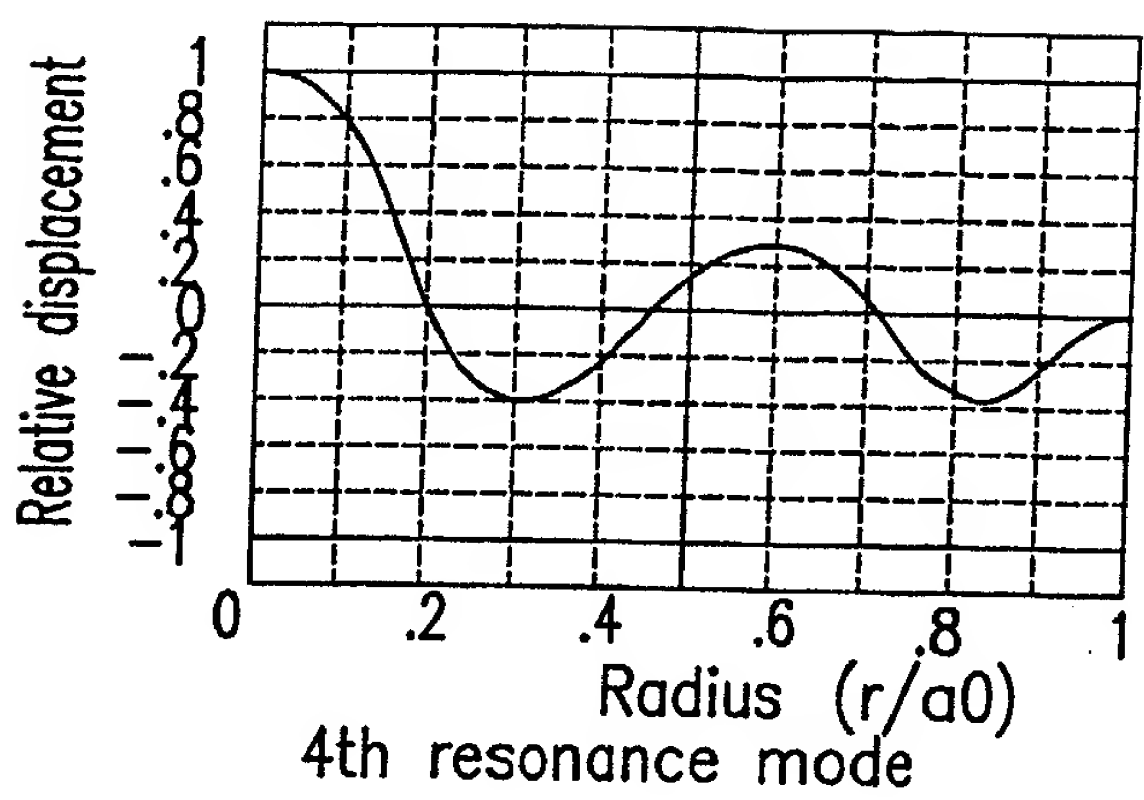


FIG. 2E

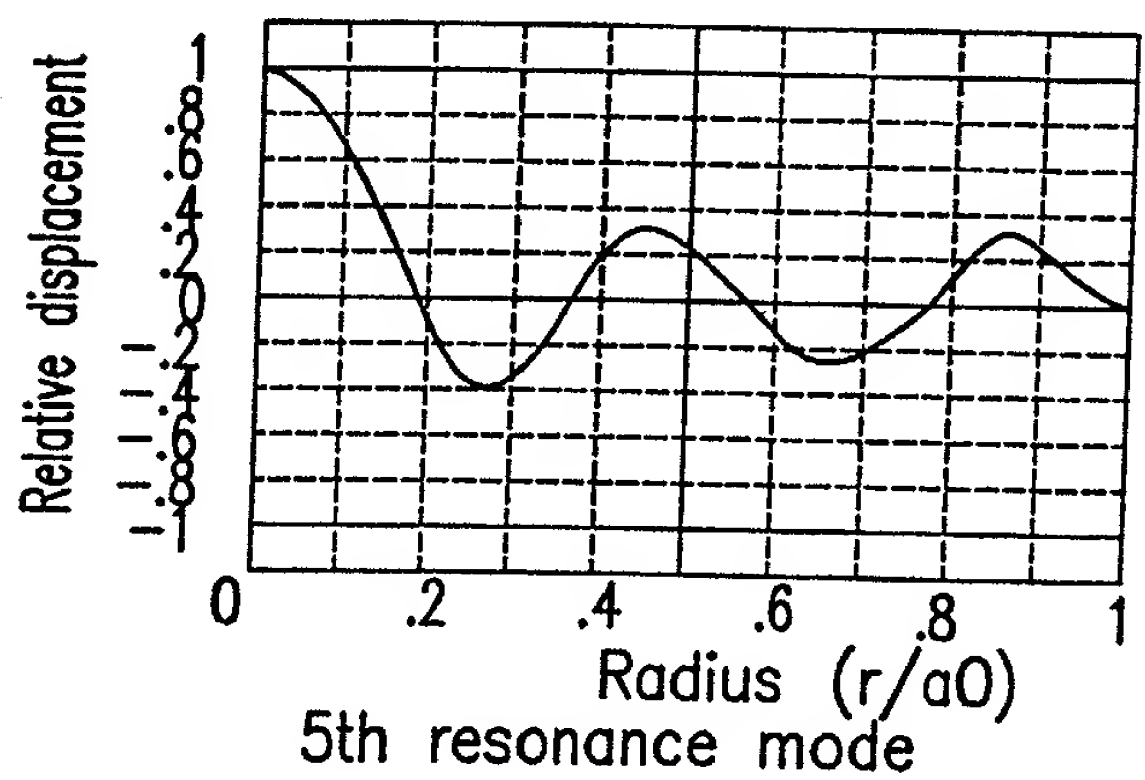
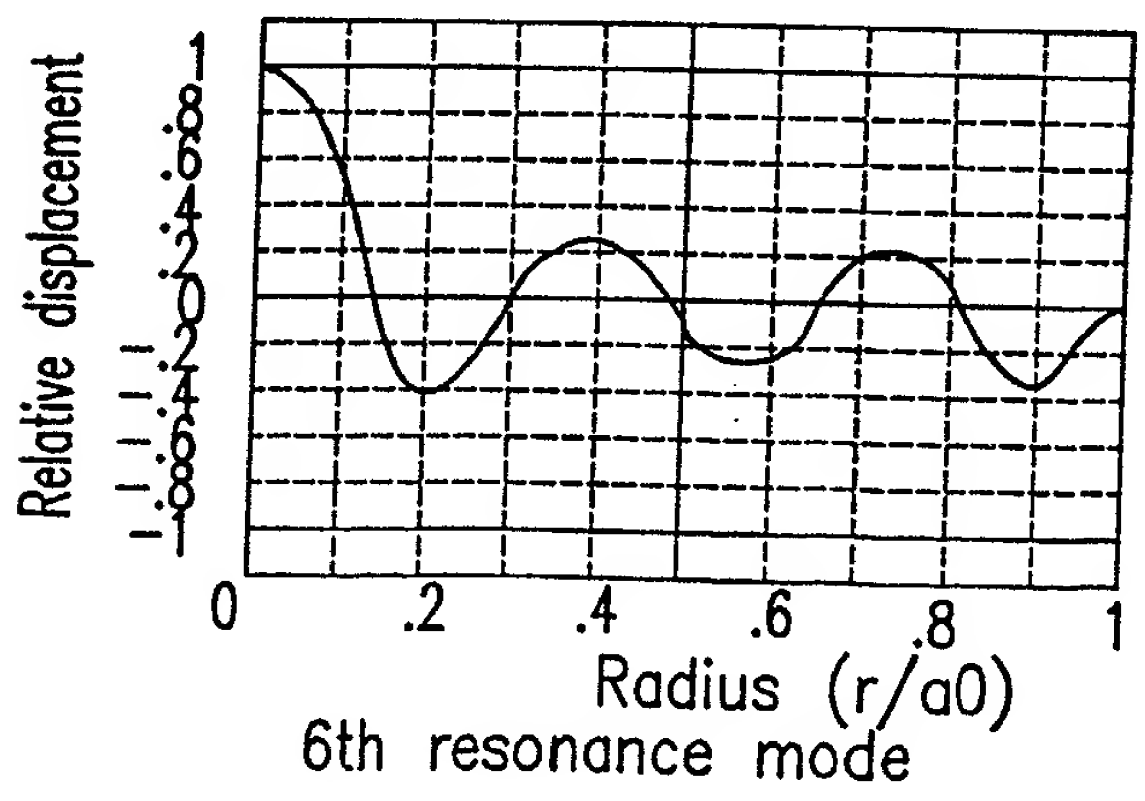
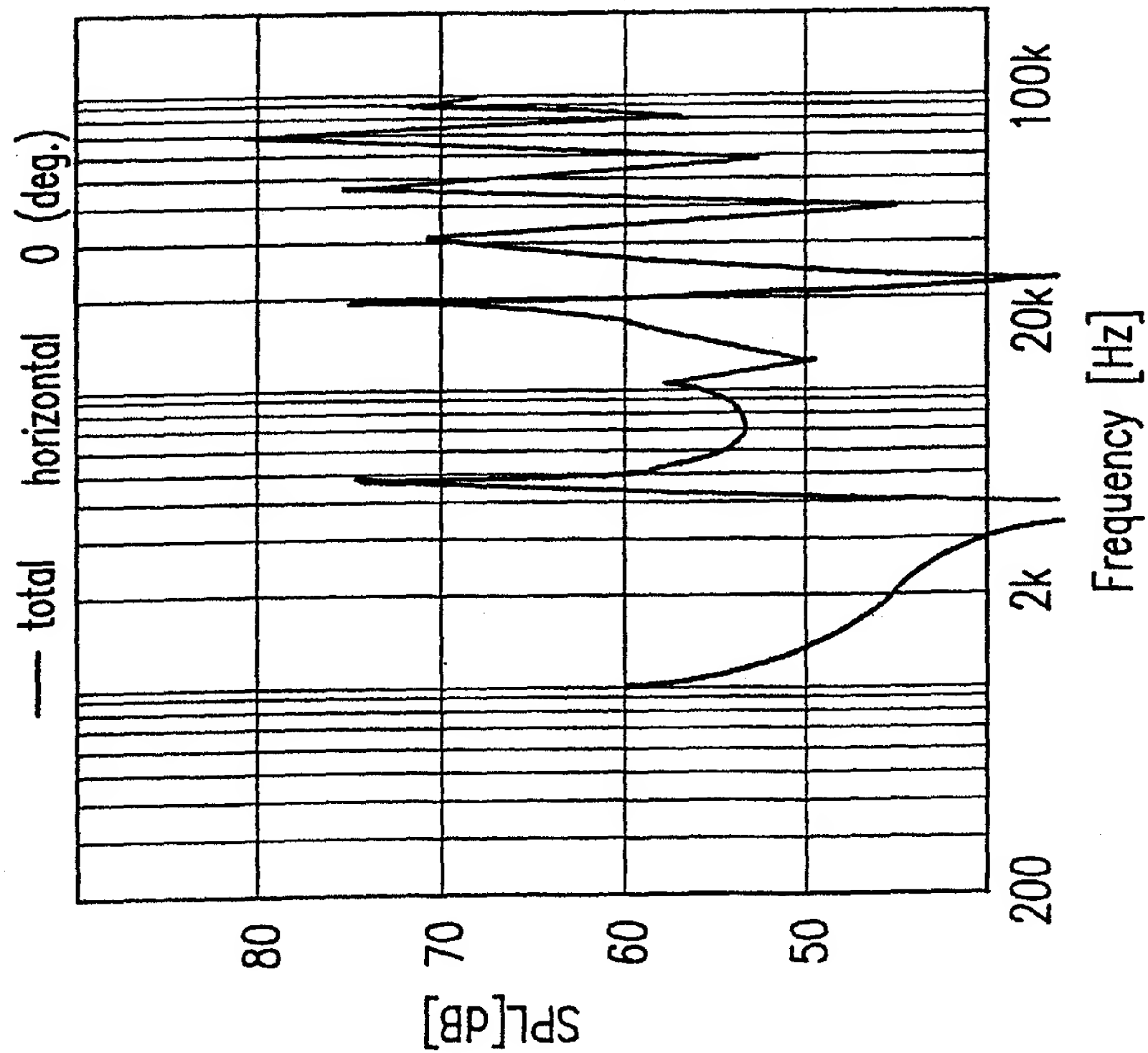


FIG. 2F



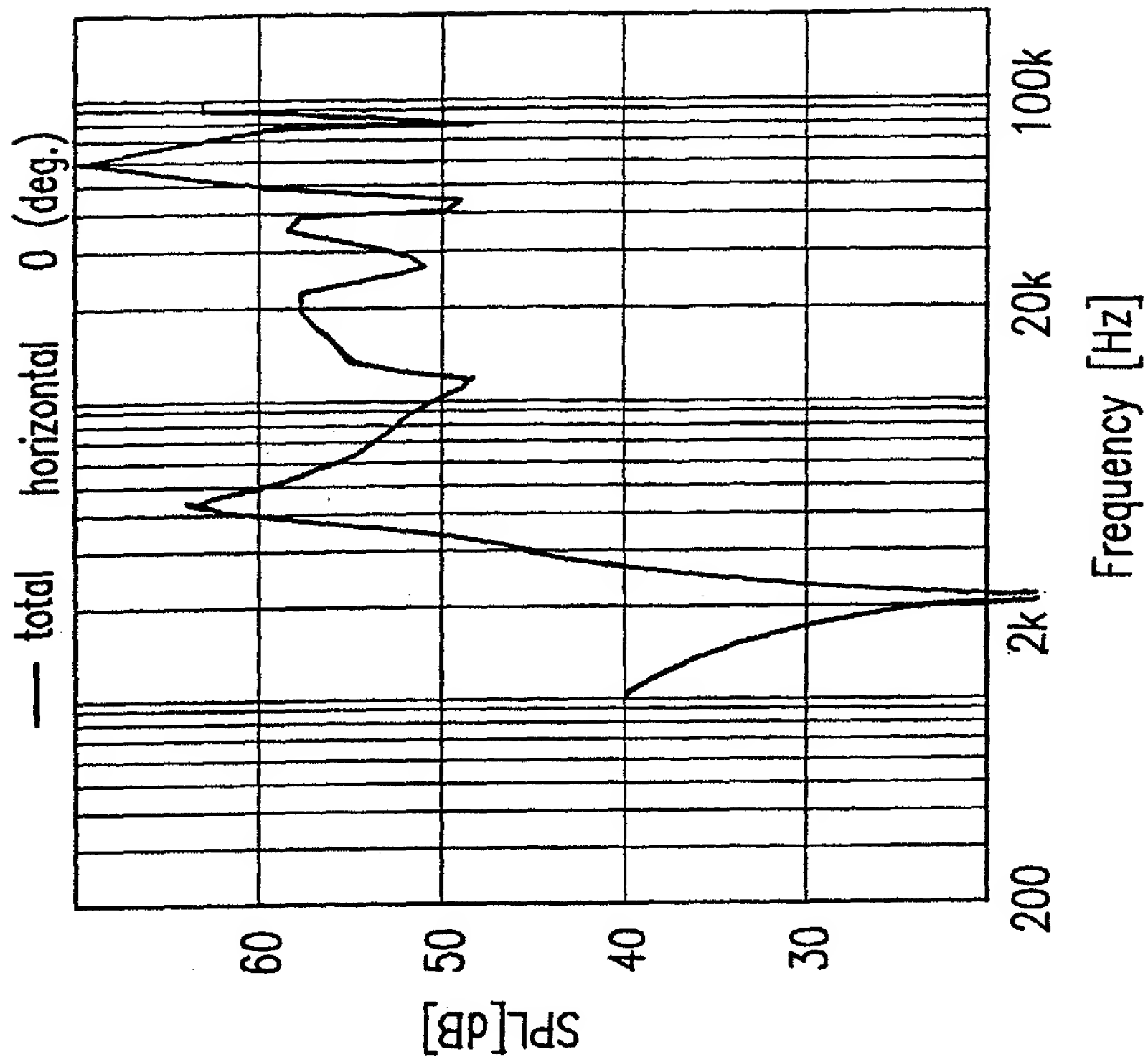
Vibration modes of piezoelectric vibrator

FIG. 3A



Without visco-elastic member

FIG. 3B



v/d ratio: 3%

FIG. 3C

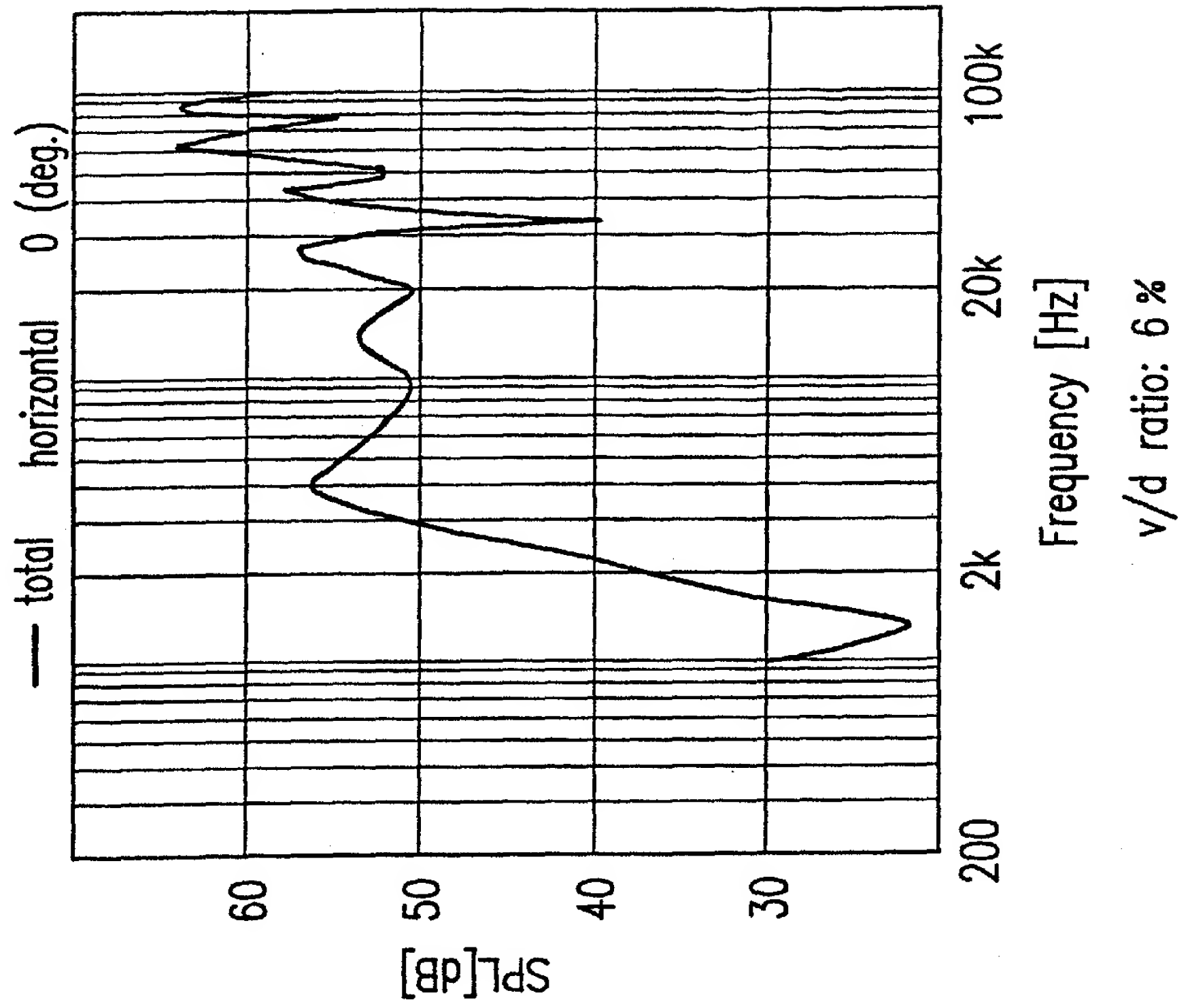


FIG. 4A

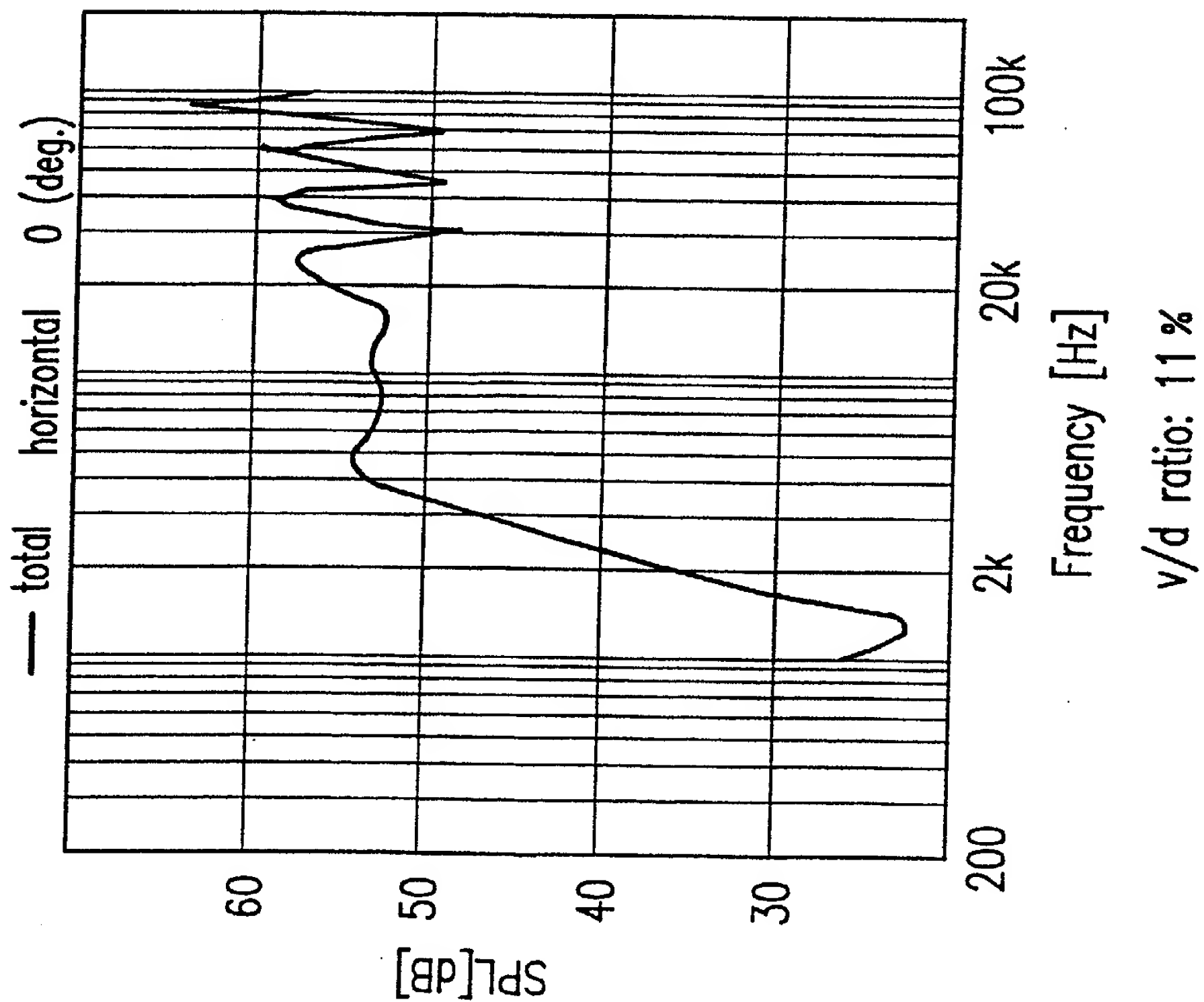


FIG. 4B

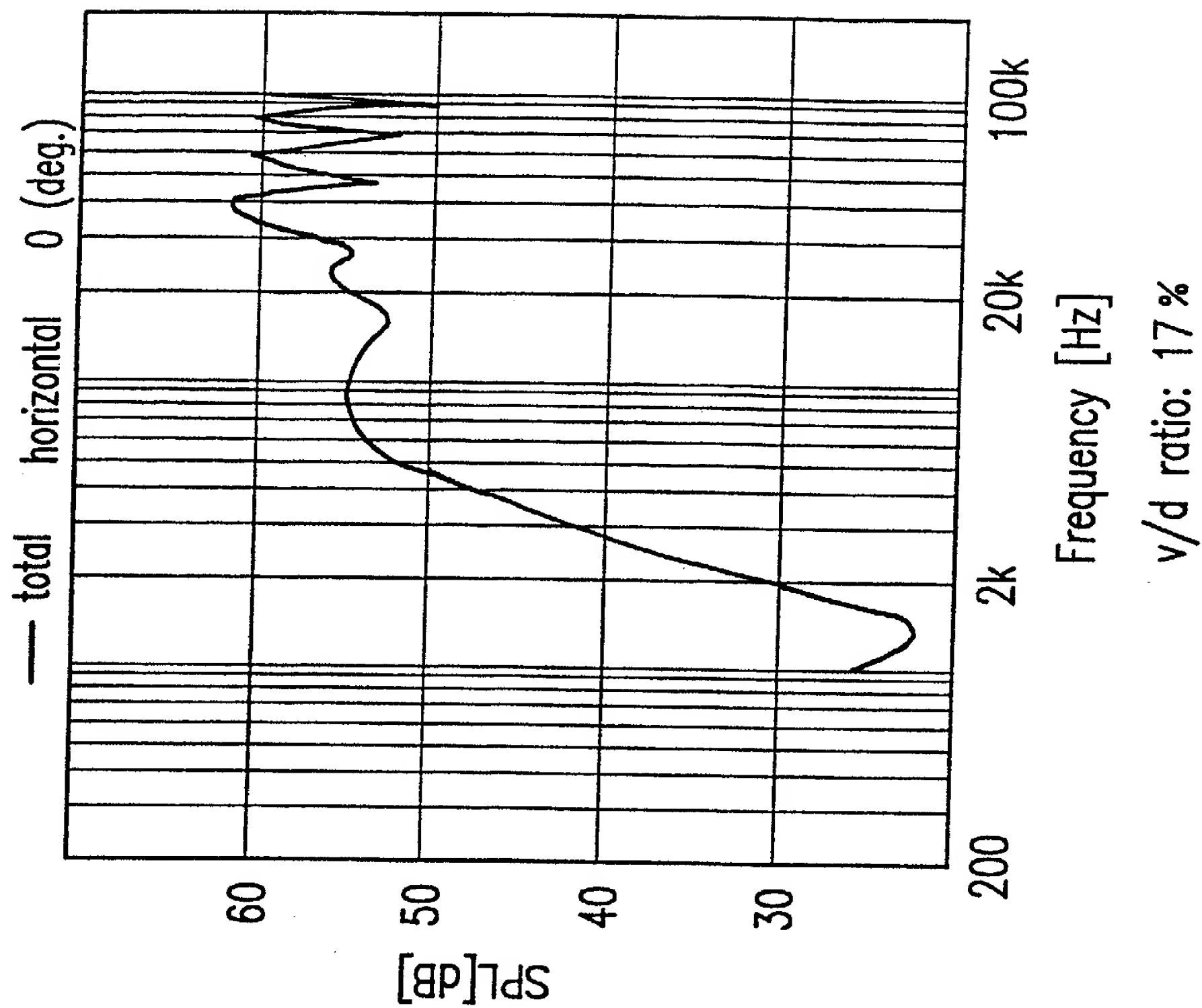


FIG. 5A

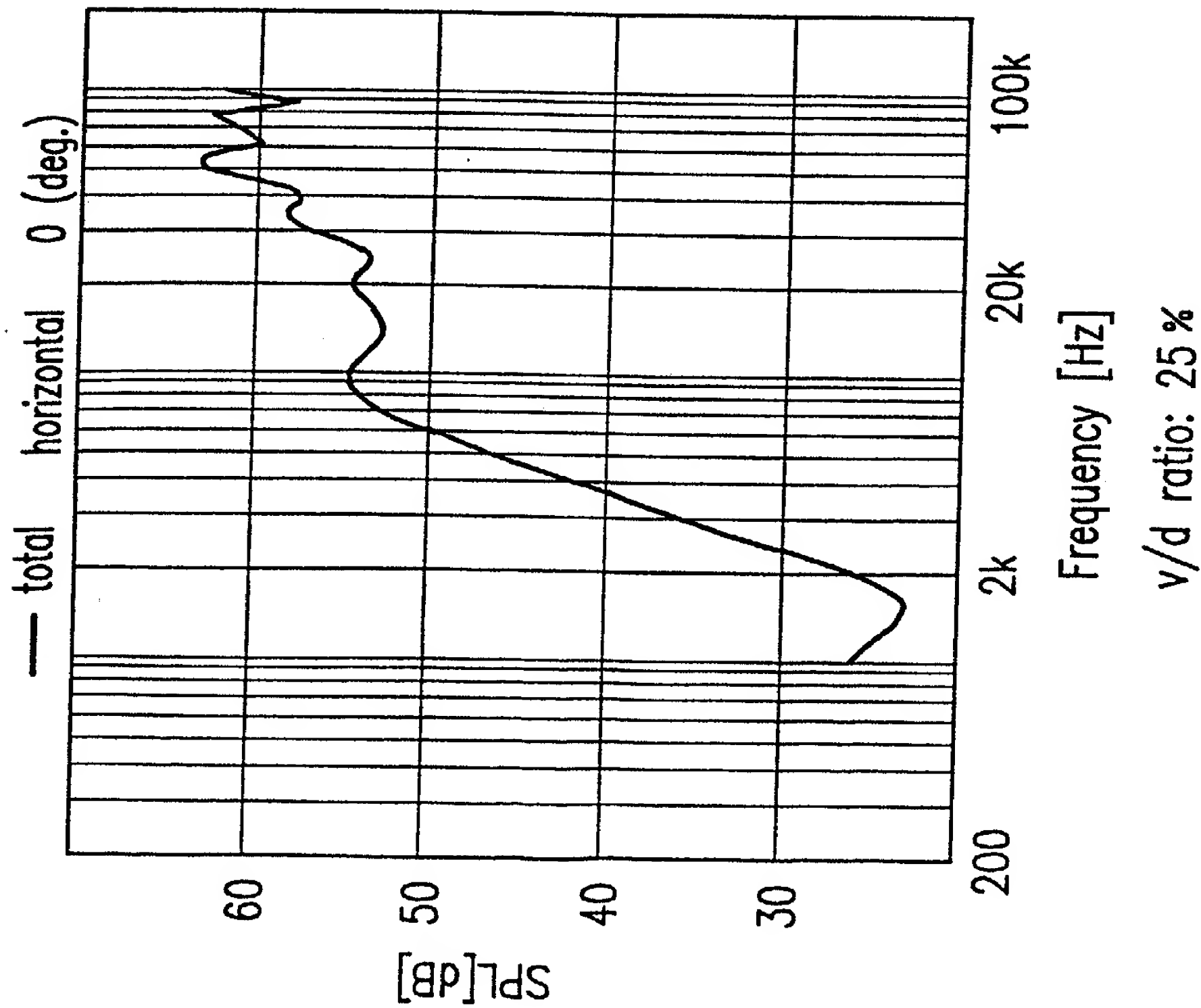


FIG. 5B

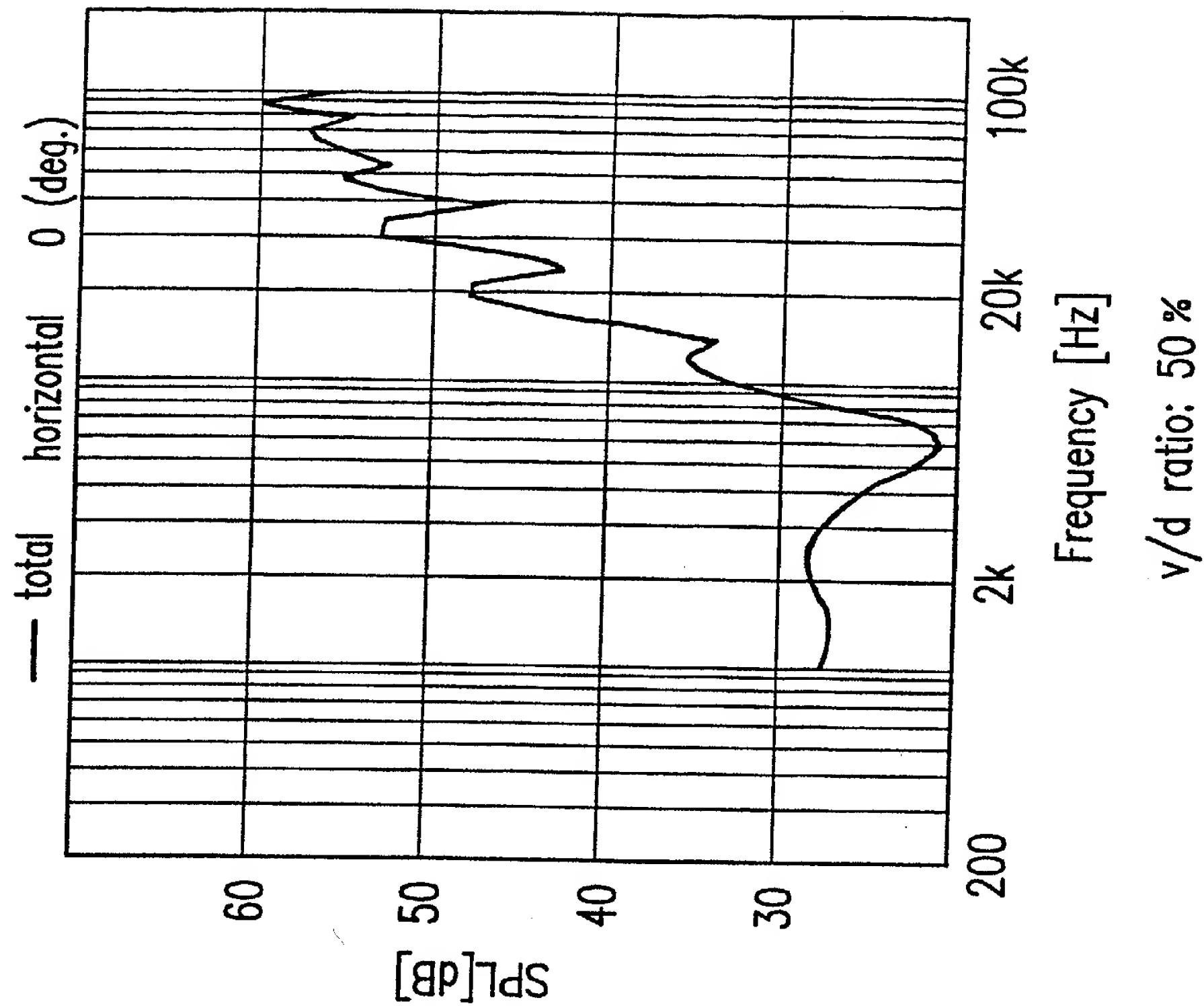


FIG.5C

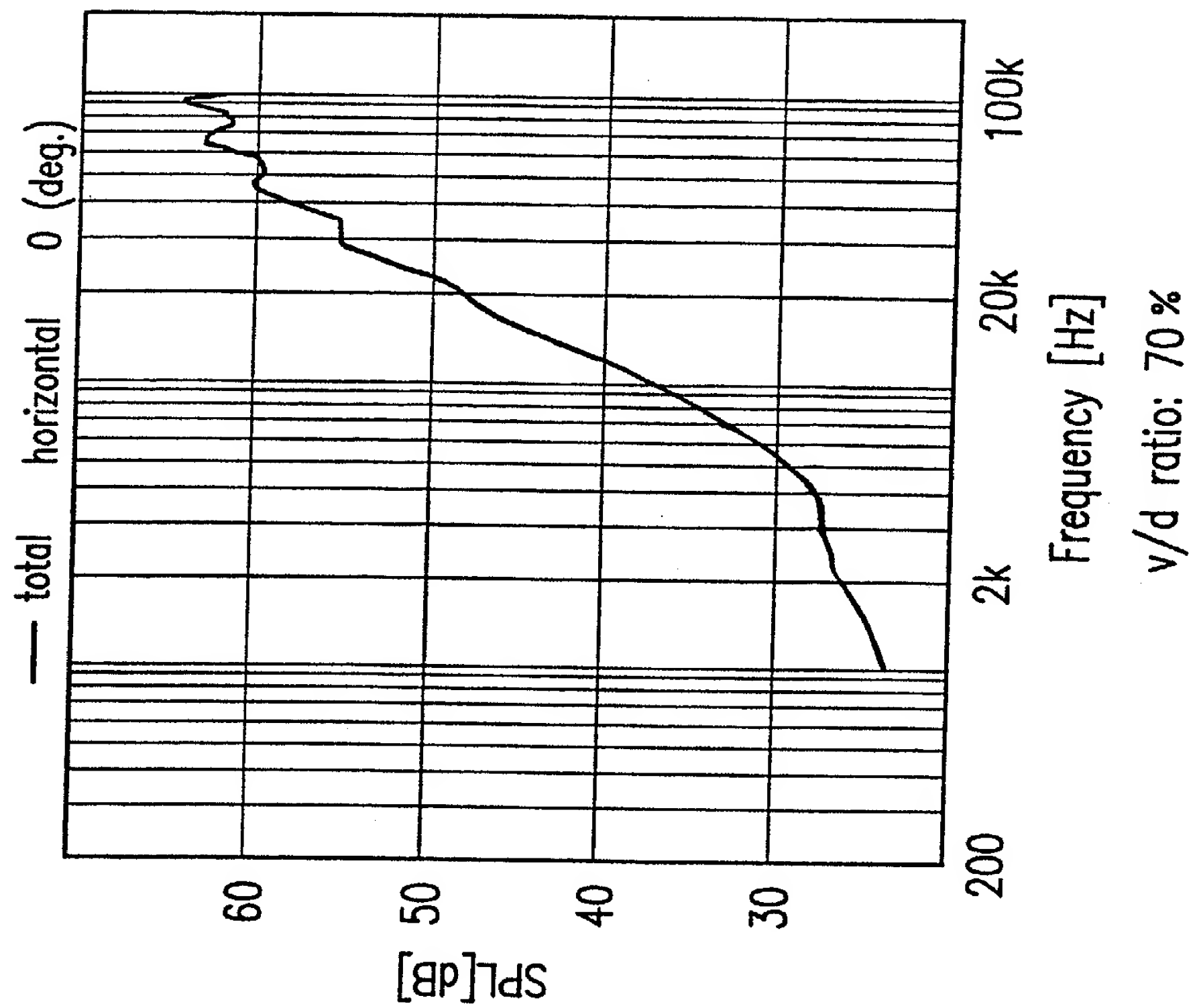




FIG. 6A

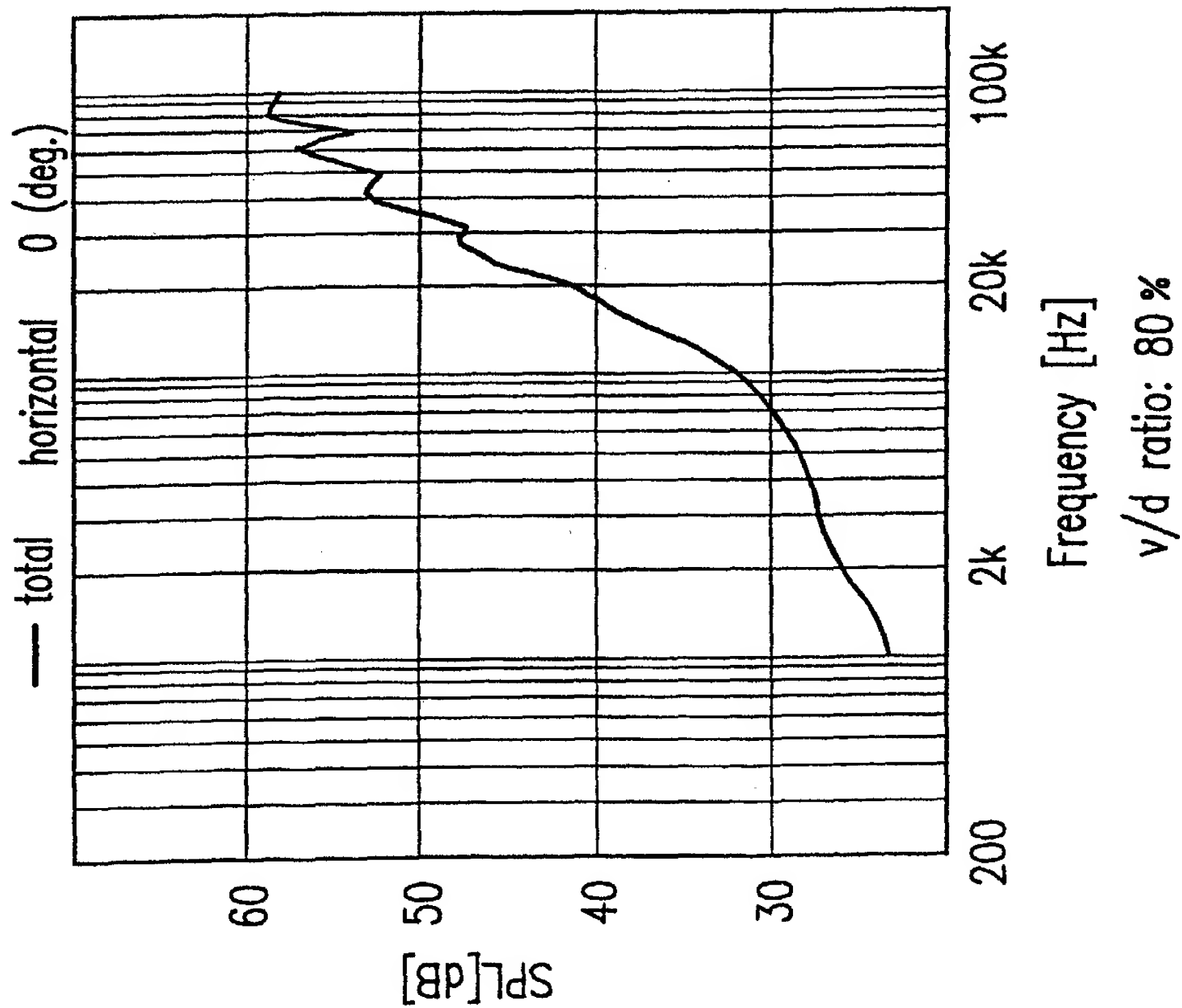


FIG. 6B

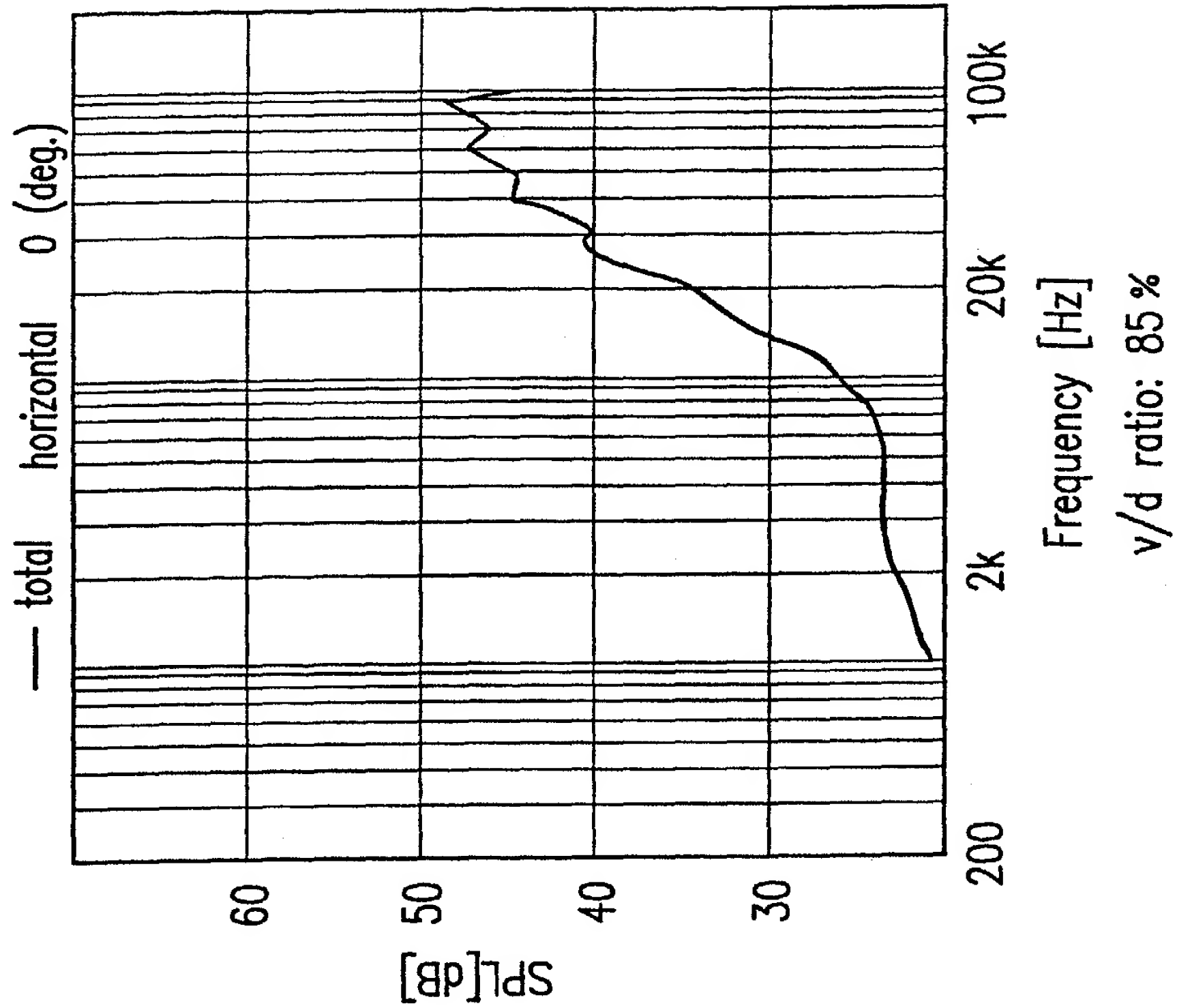


FIG. 6C

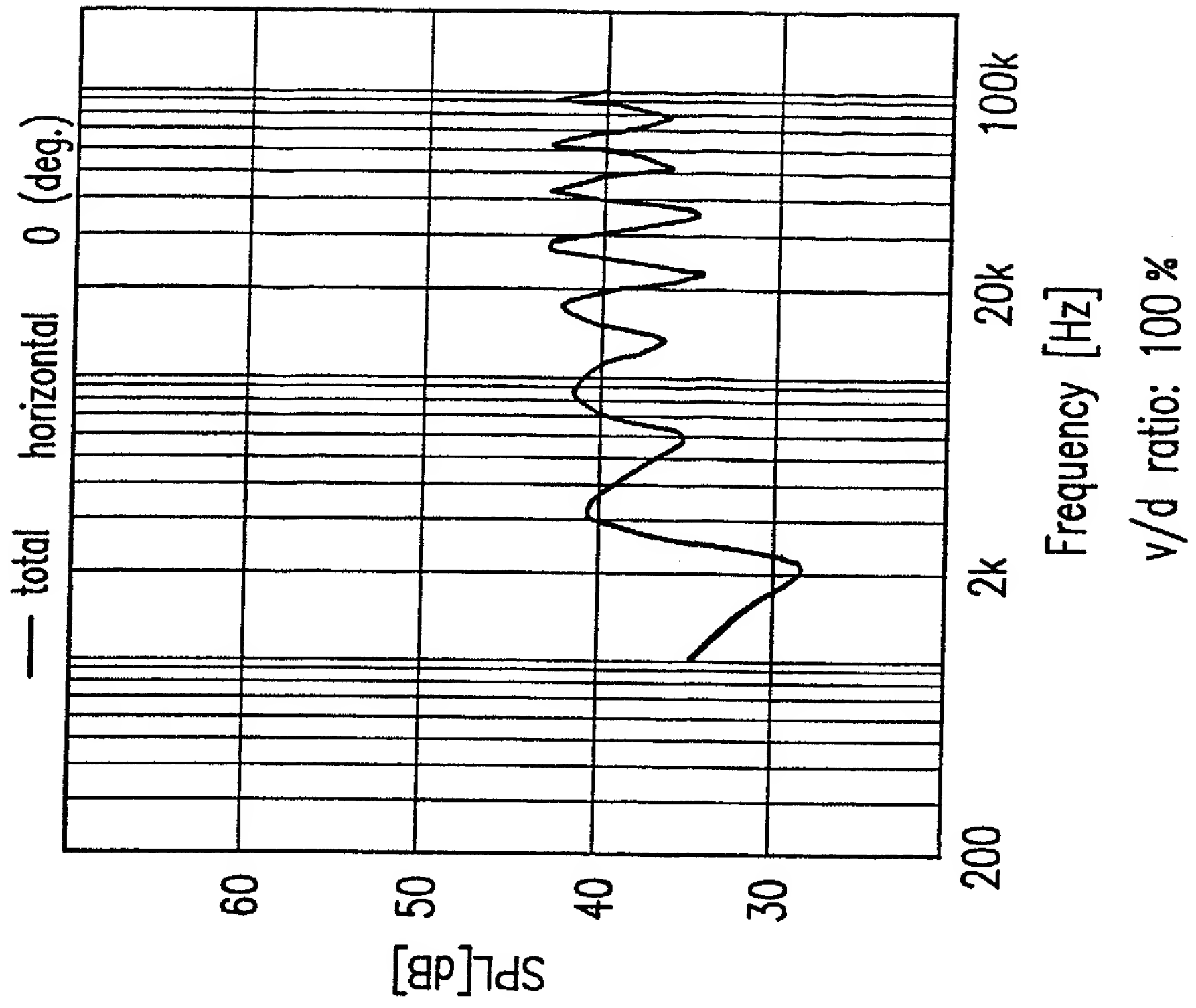


FIG. 7A

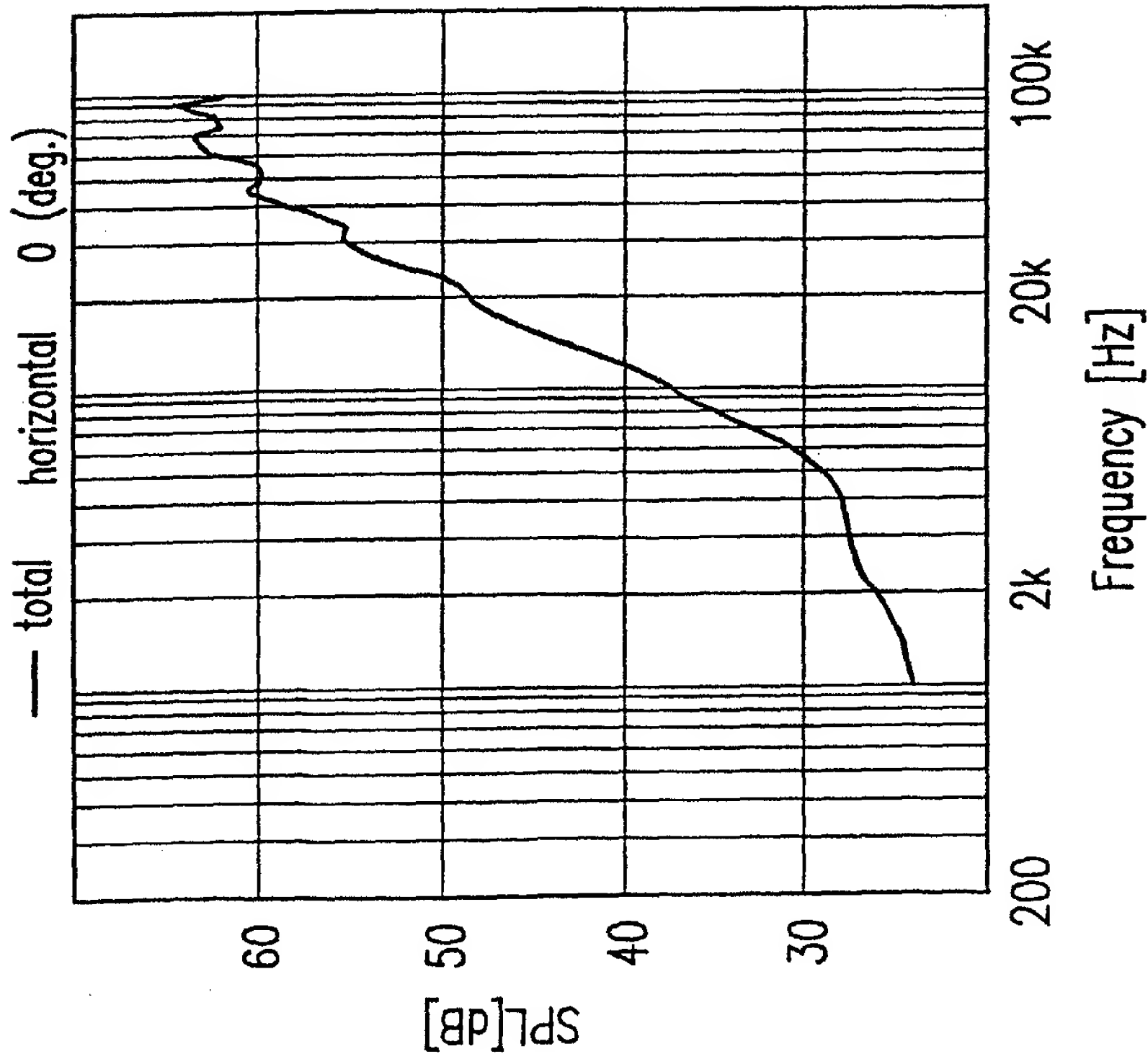


FIG. 7B

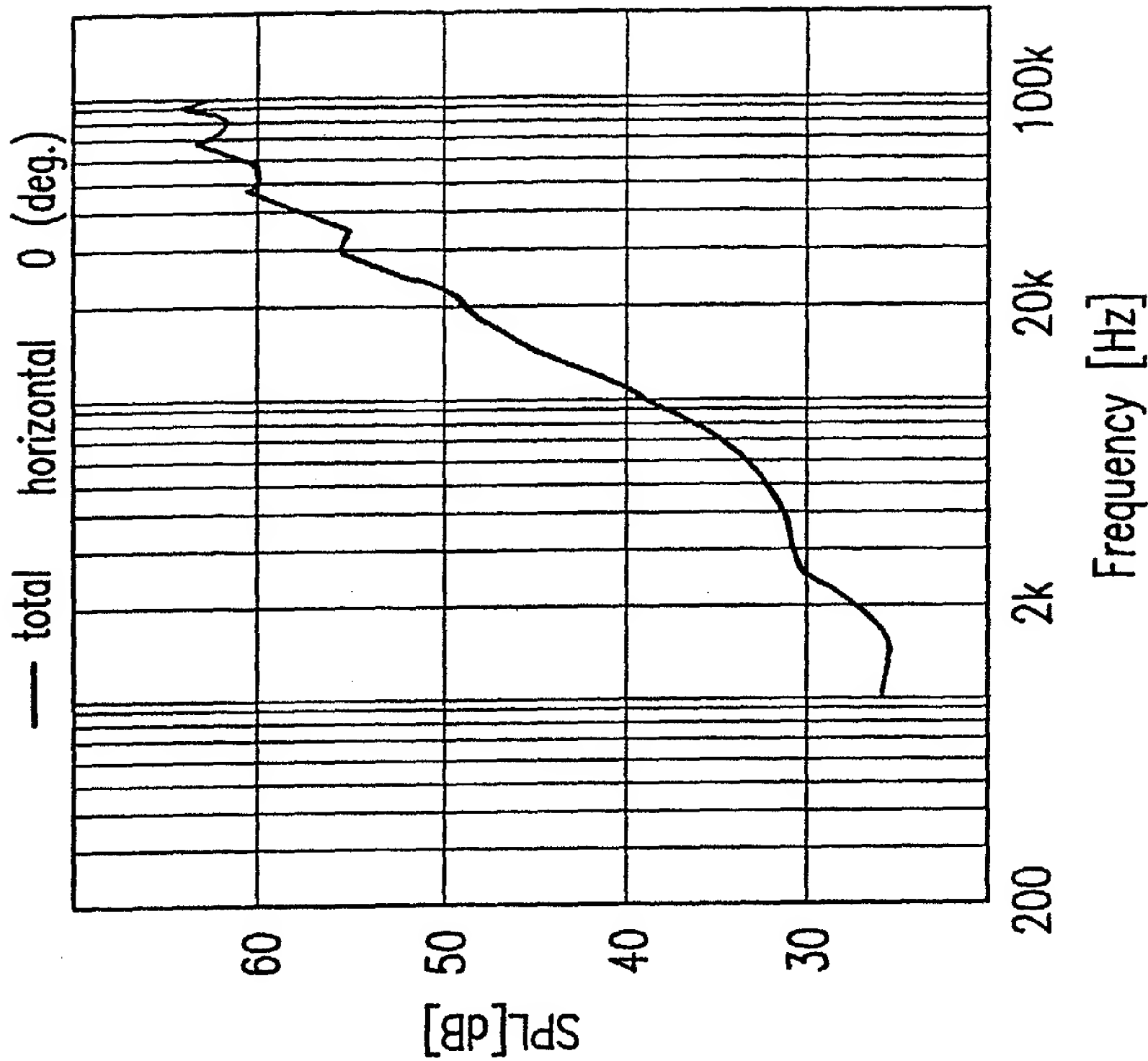
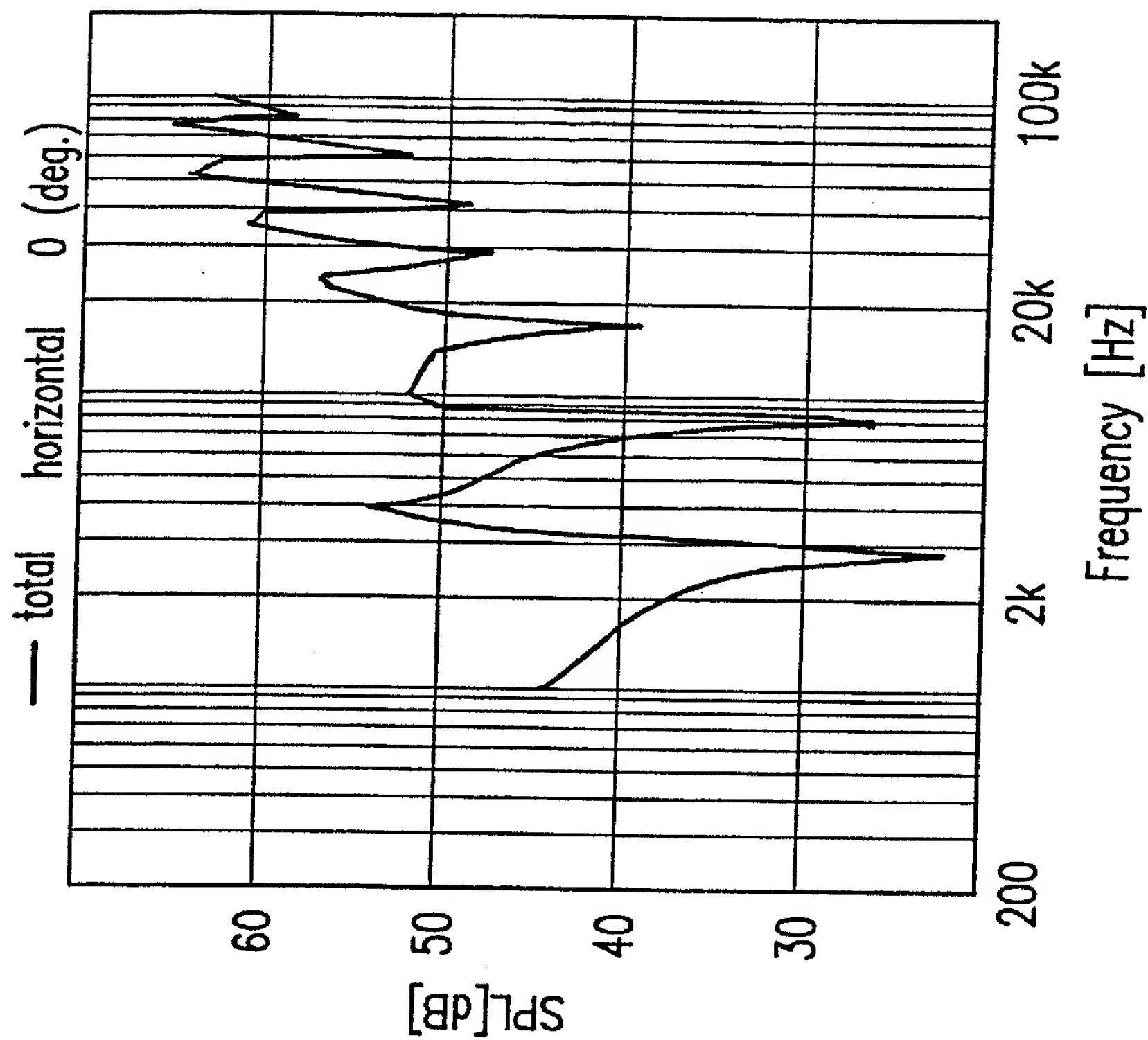


FIG. 7C



v/d ratio: 70 %  
Visco-elastic member  
has thickness of 1 mm

FIG. 8

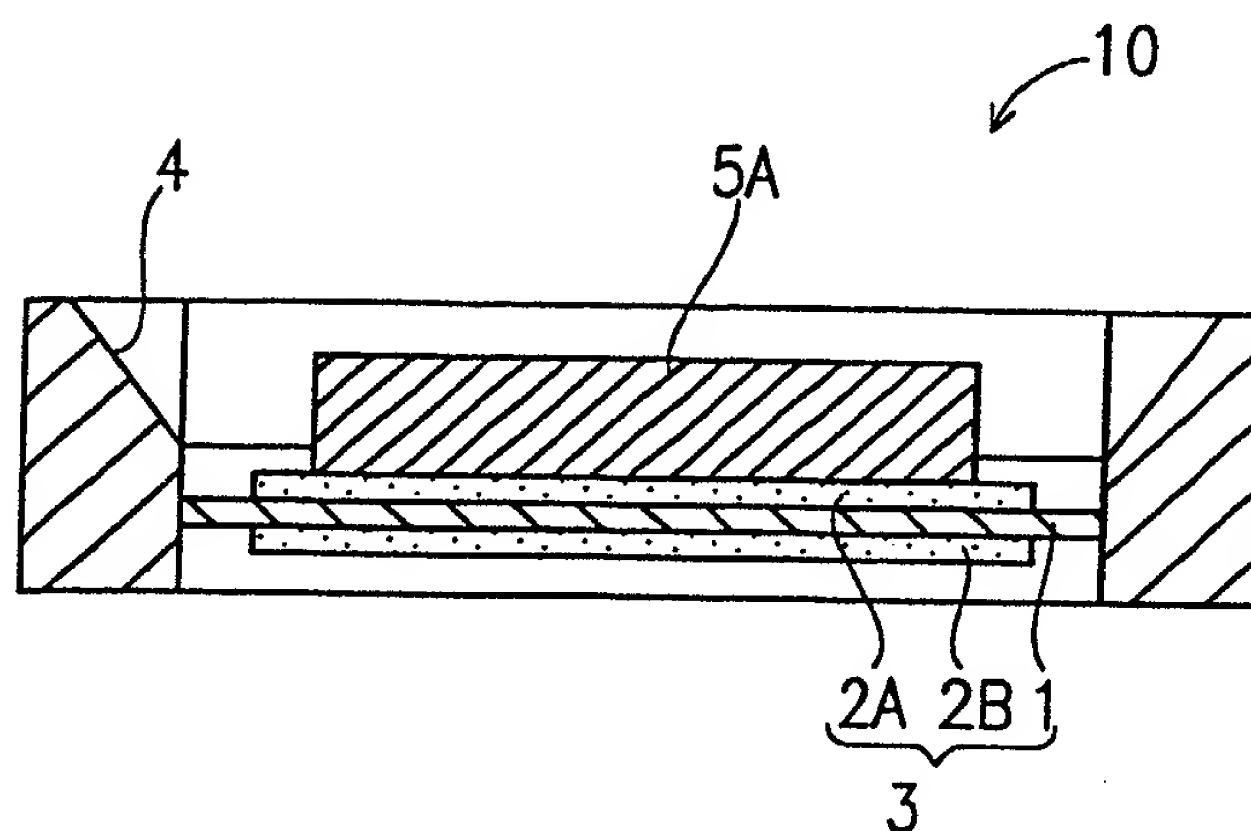


FIG. 9

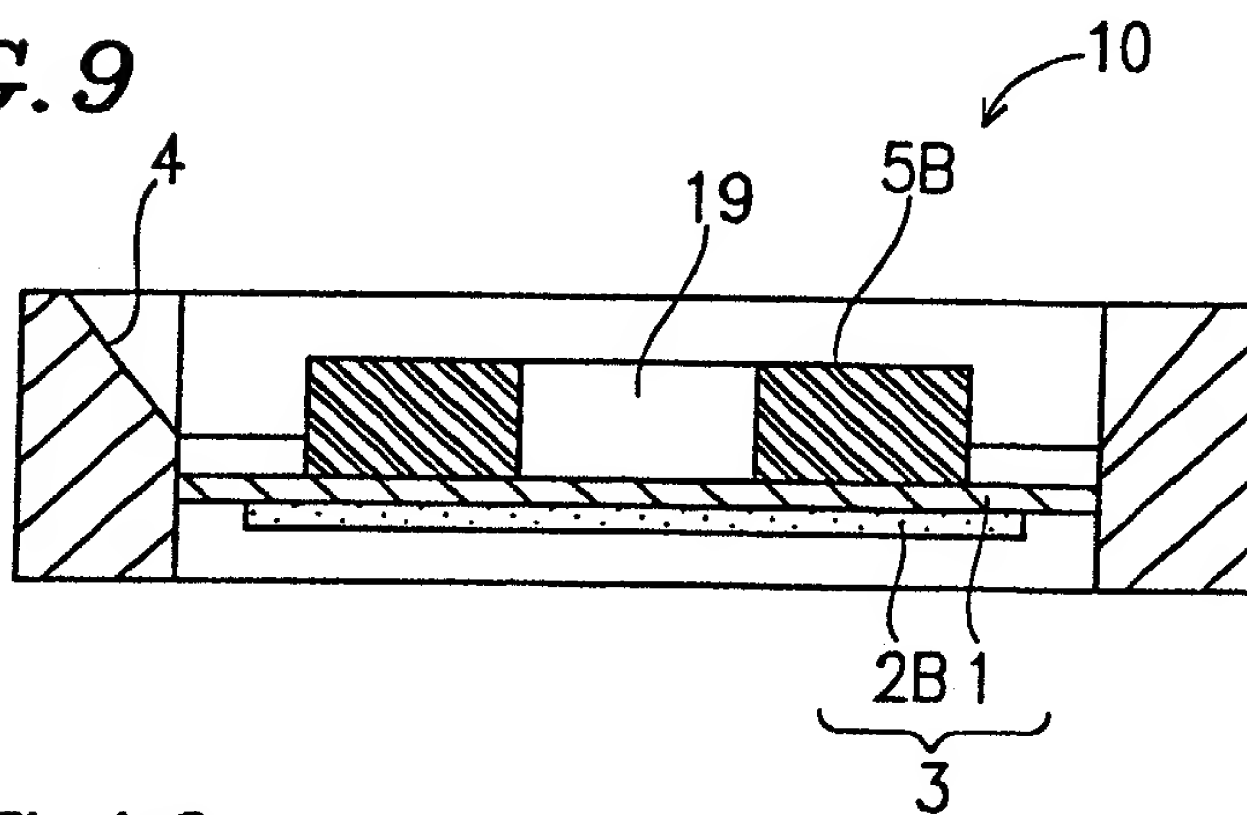


FIG. 10

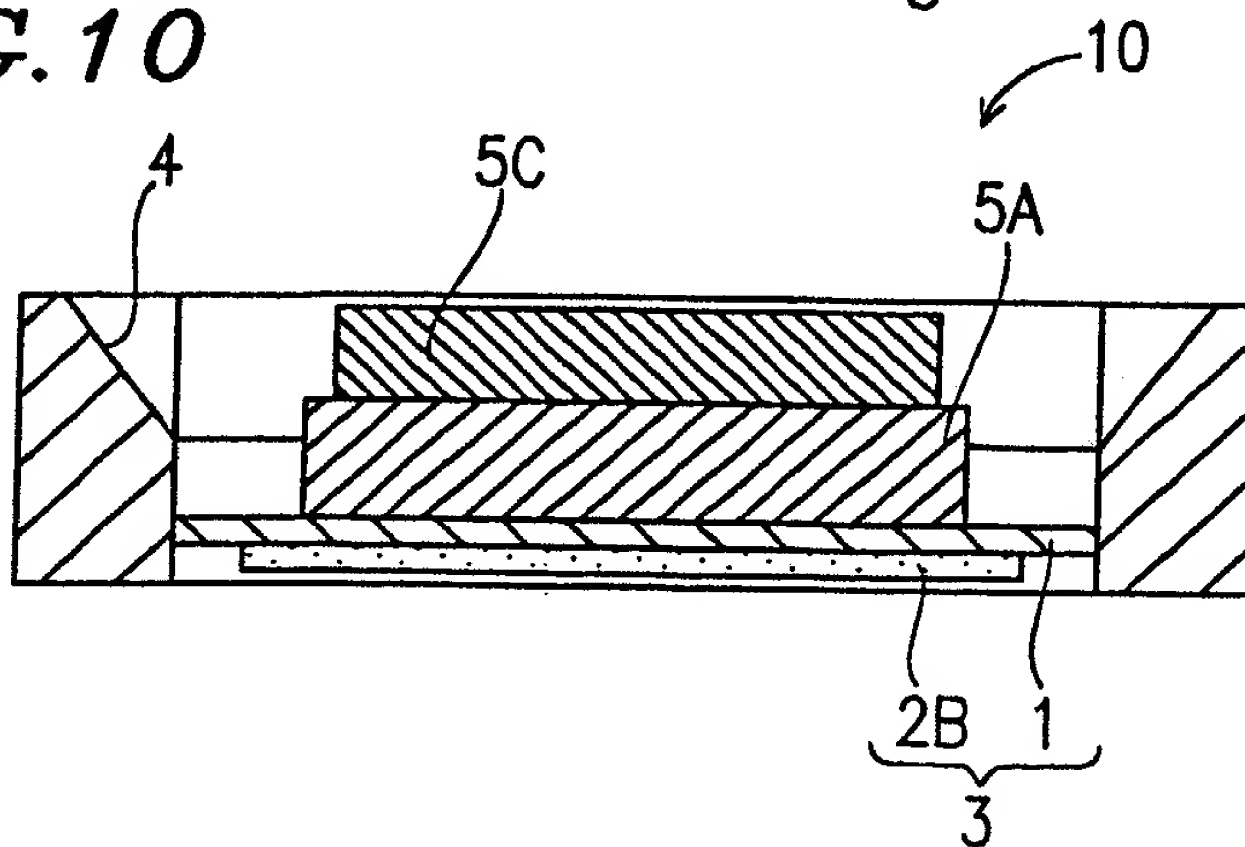


FIG. 11

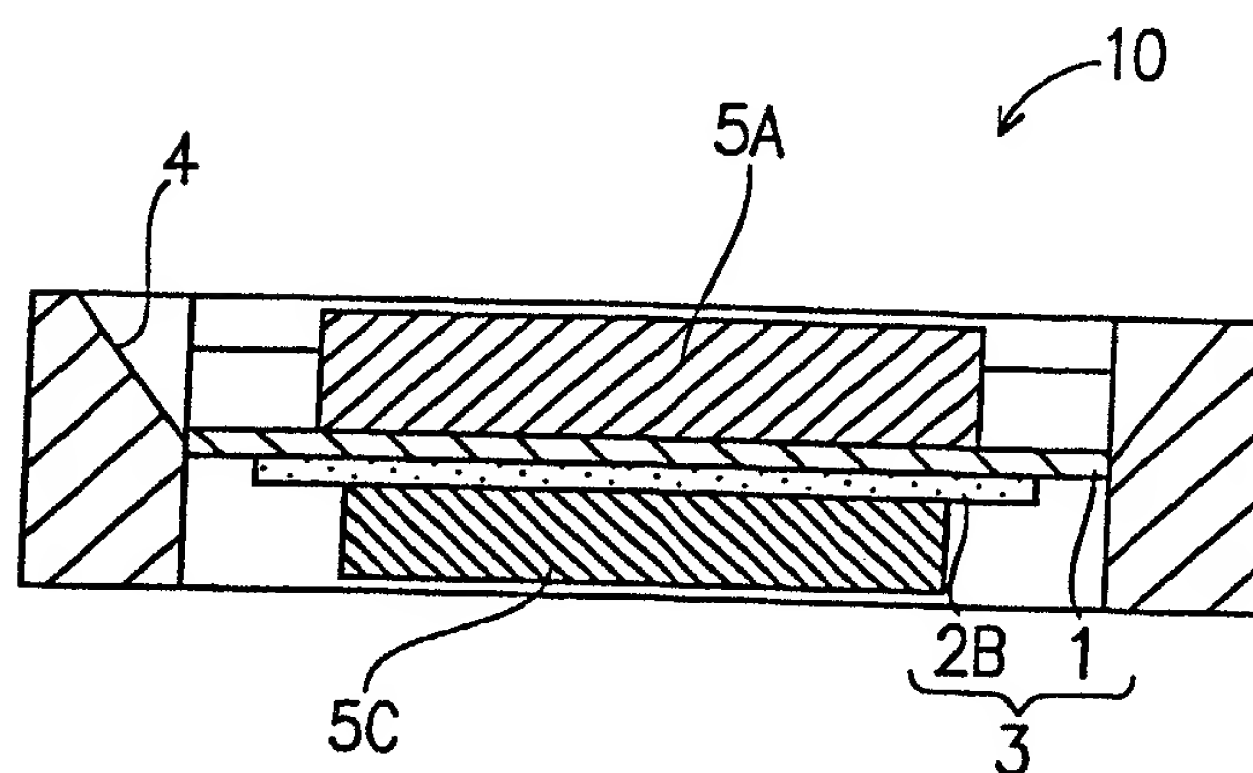


FIG. 12

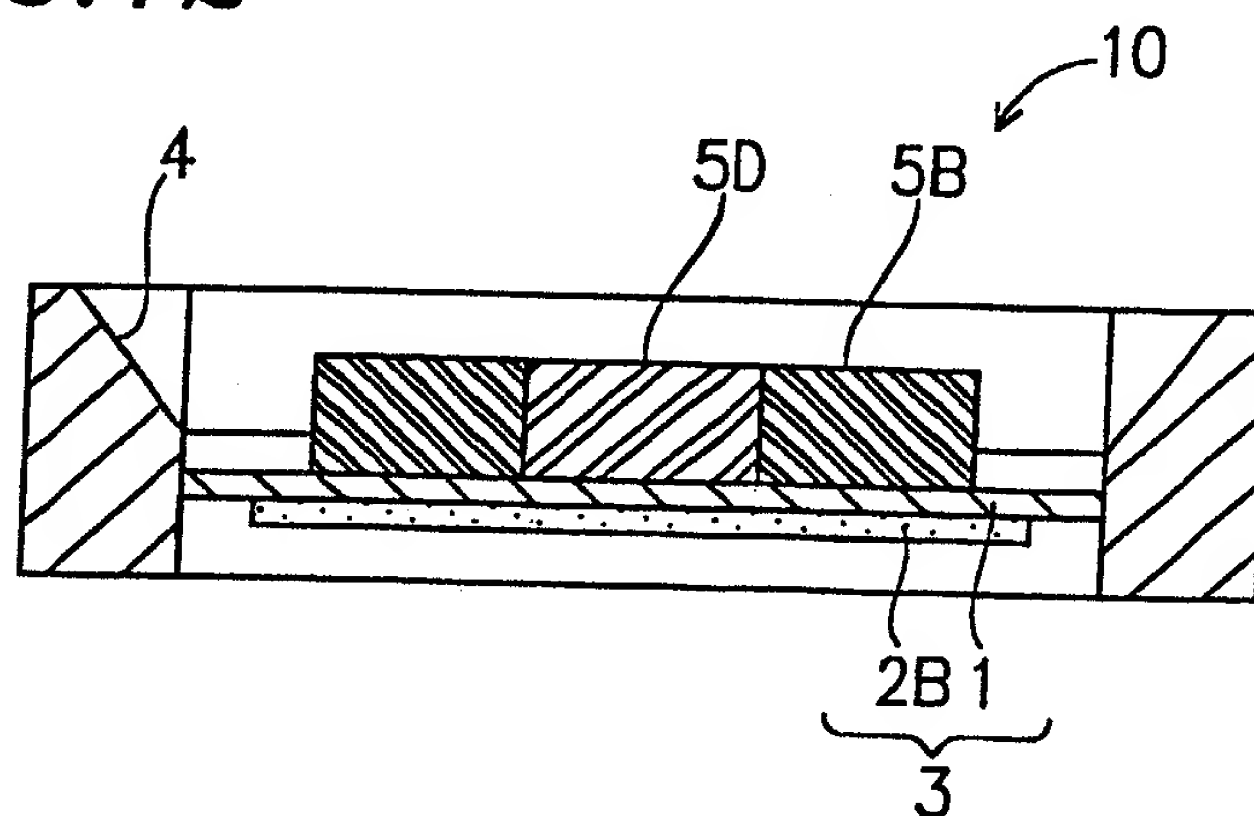


FIG. 13

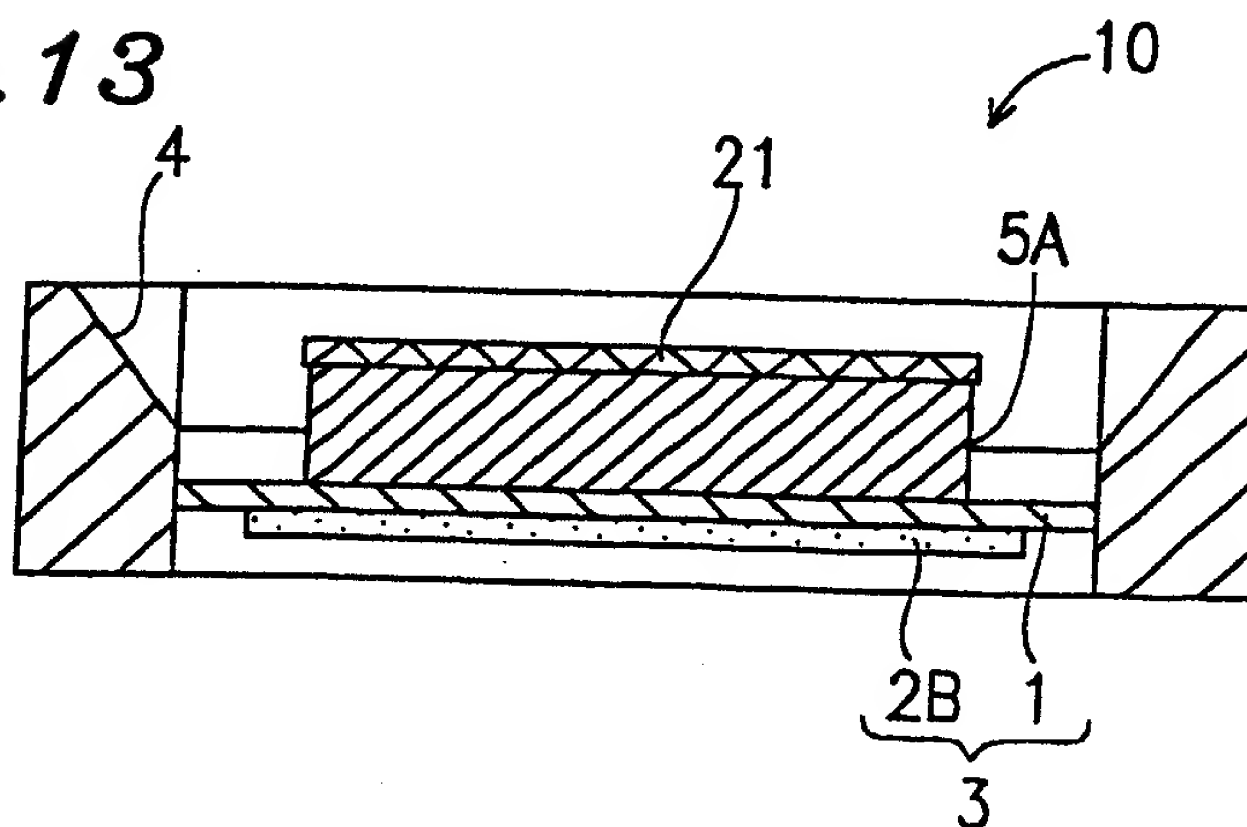


FIG. 14A

P21560

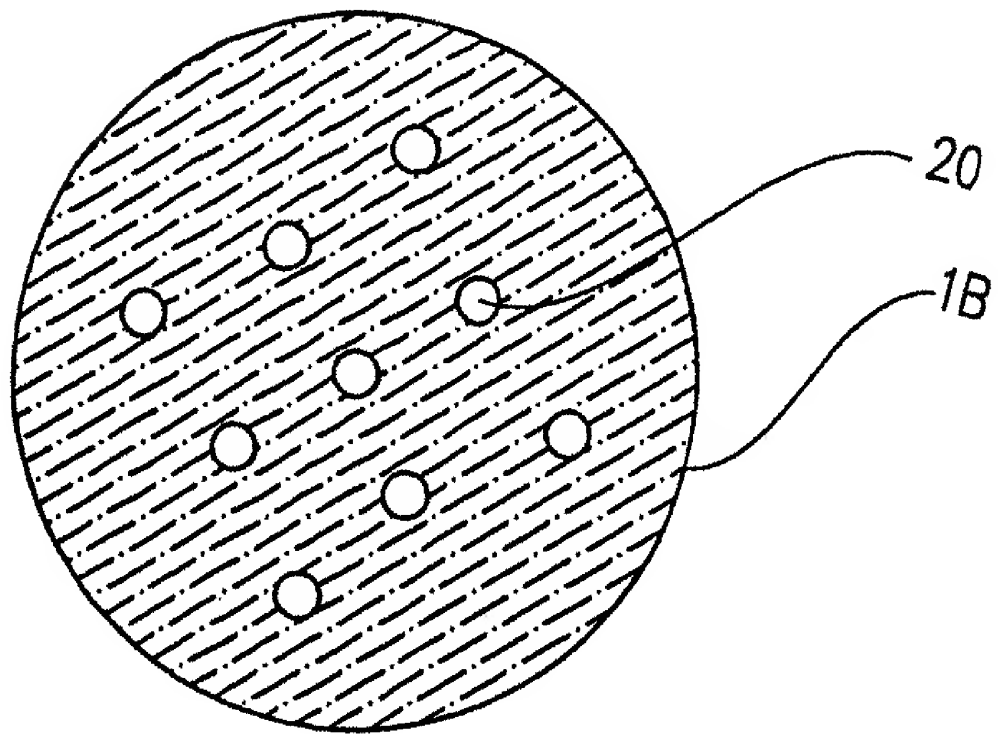


FIG. 14B

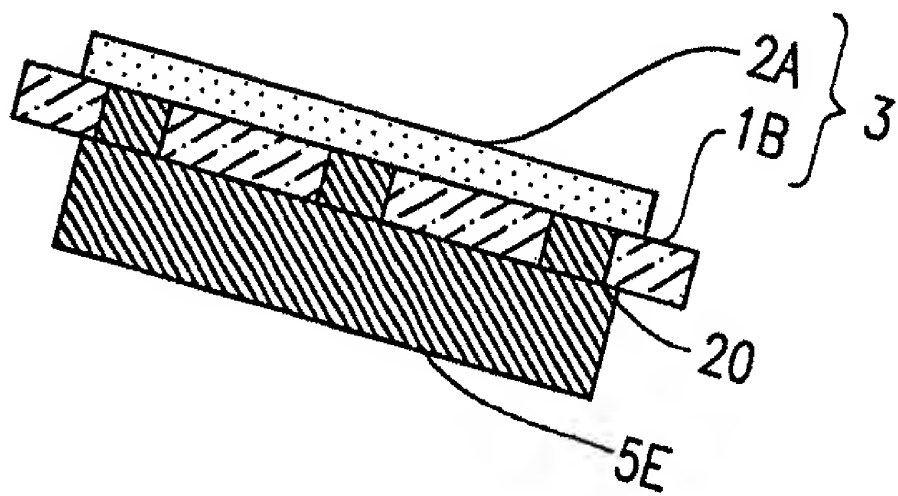


FIG. 15

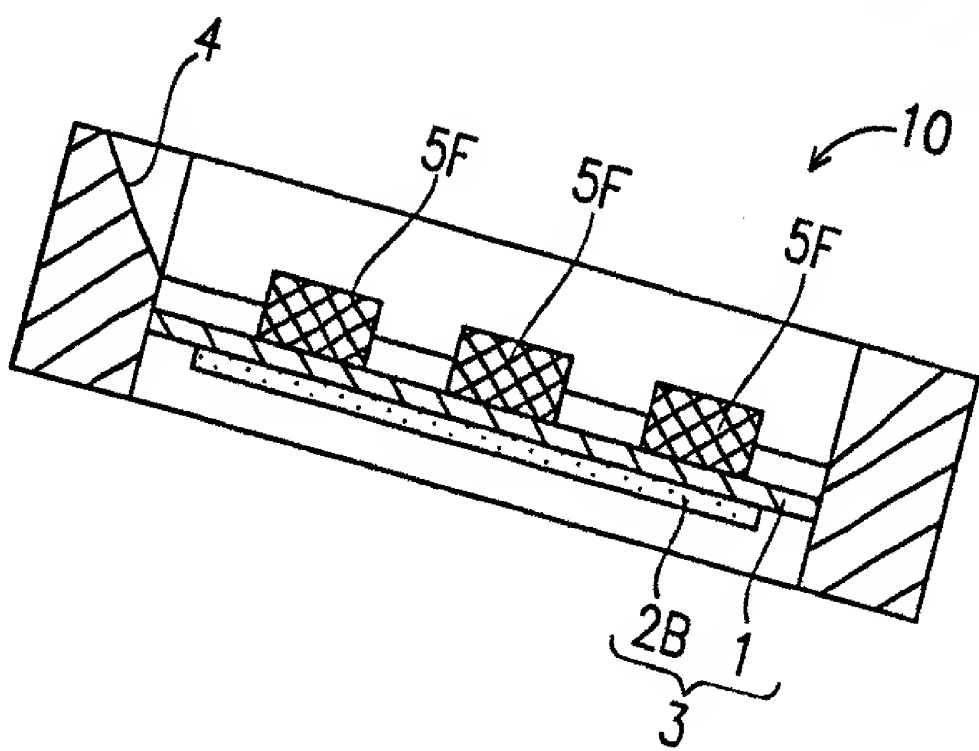


FIG. 16

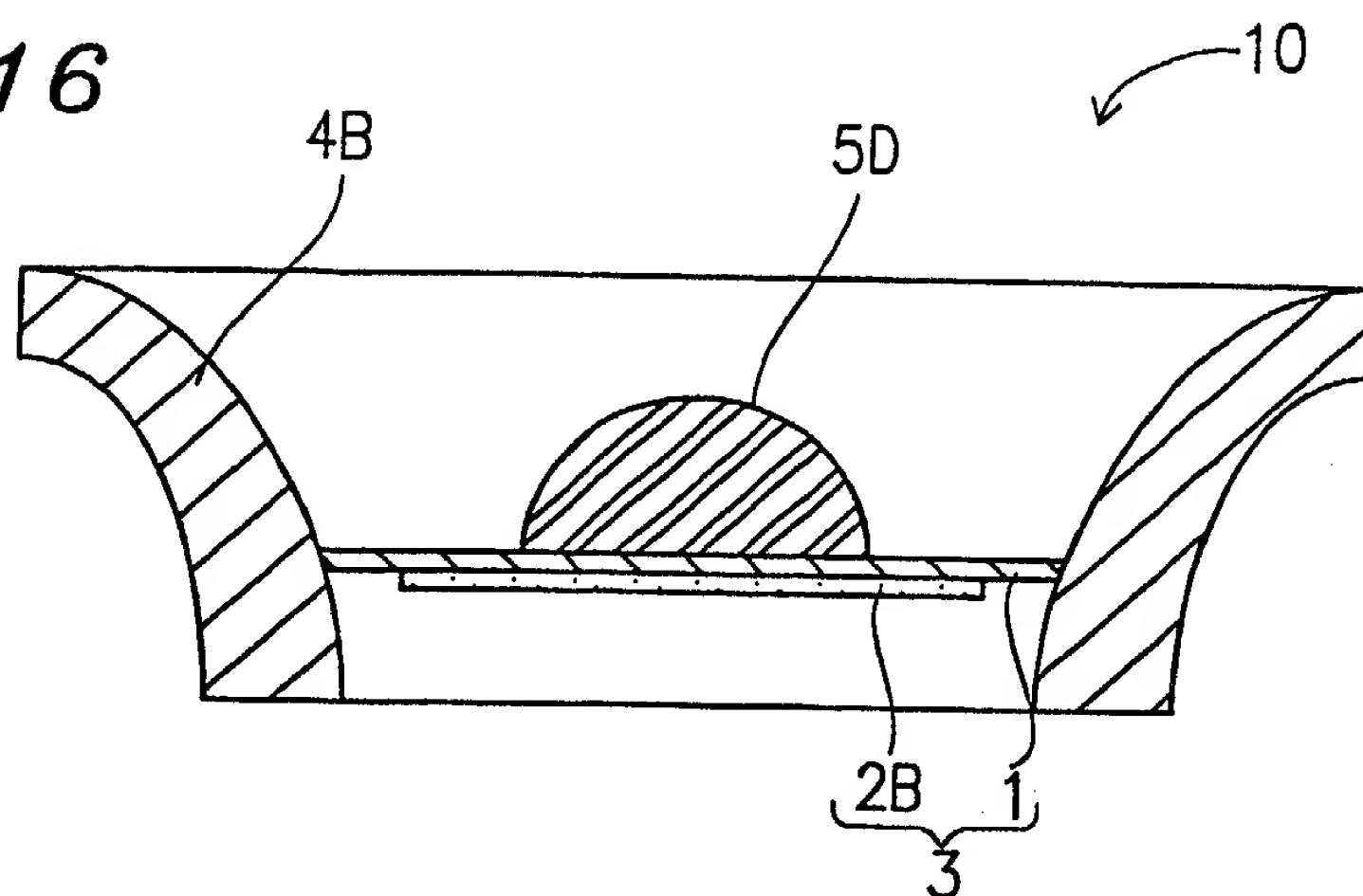


FIG. 17

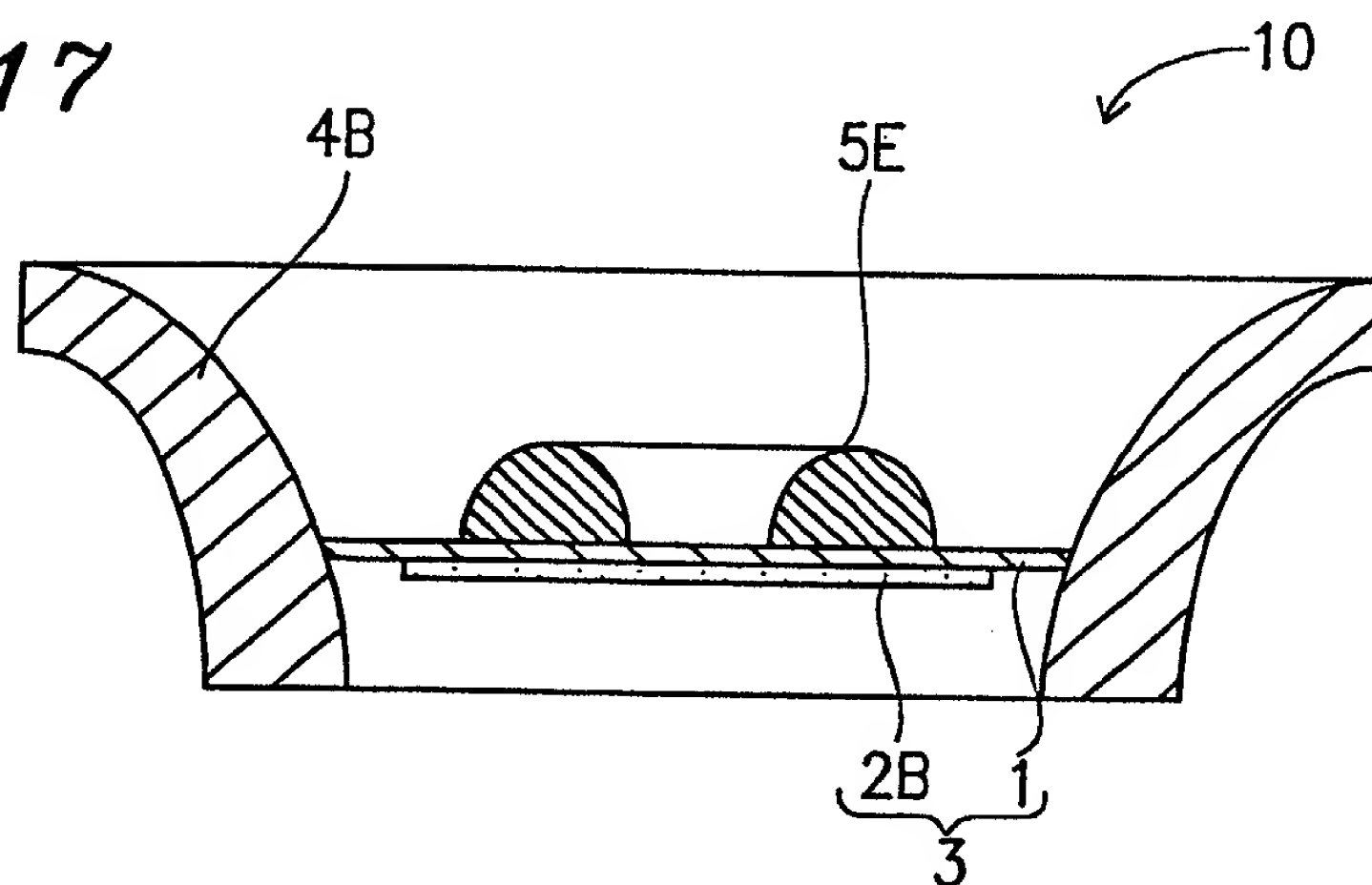




FIG. 18

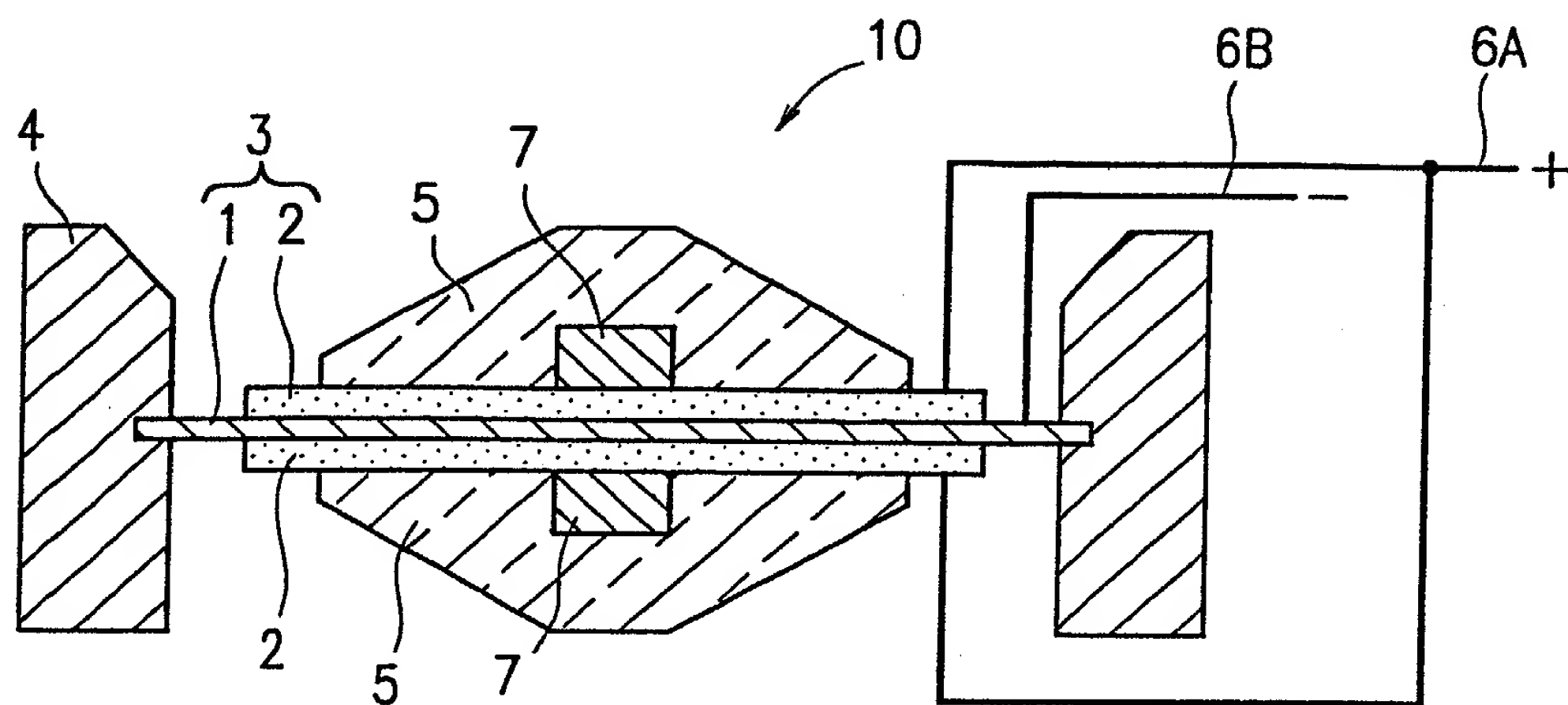
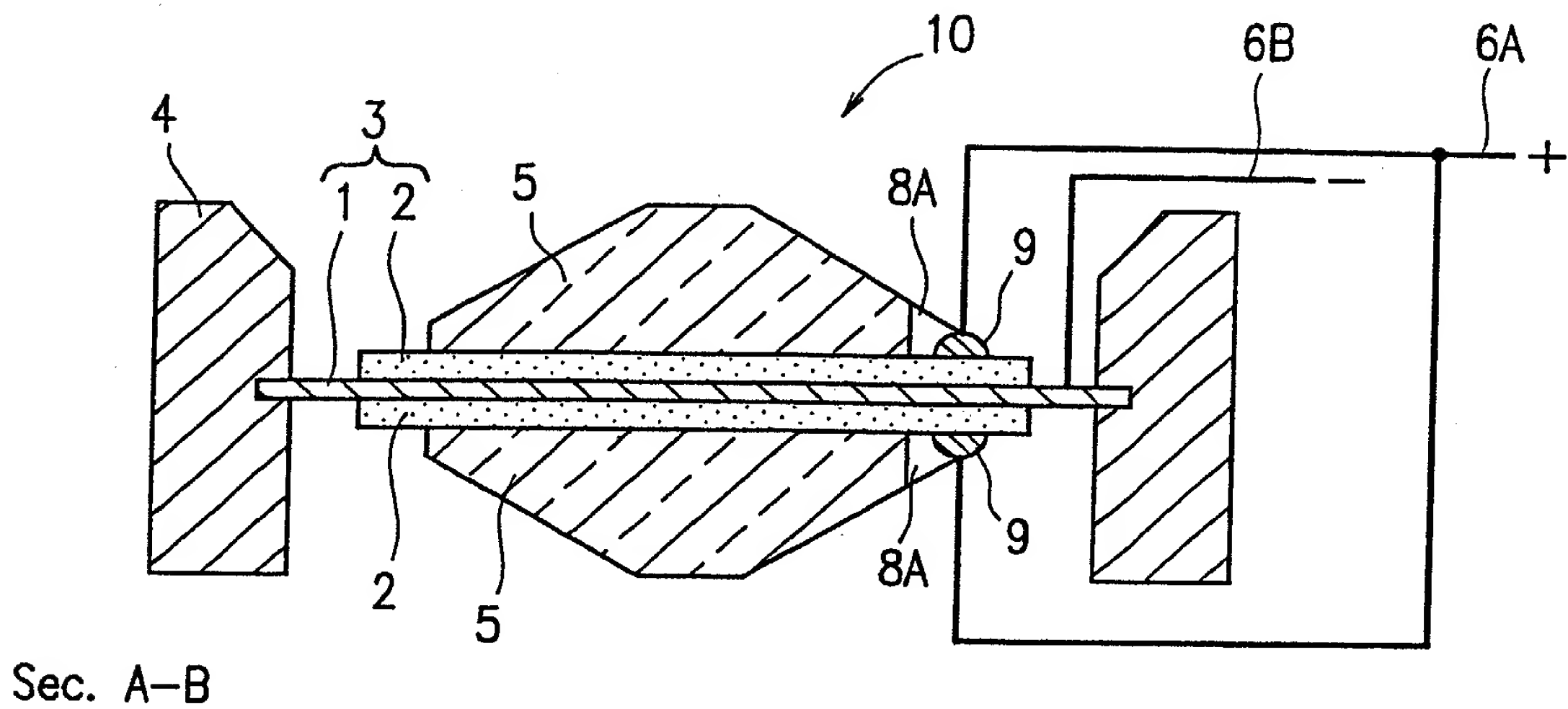


FIG. 19A



Sec. A-B

FIG. 19B

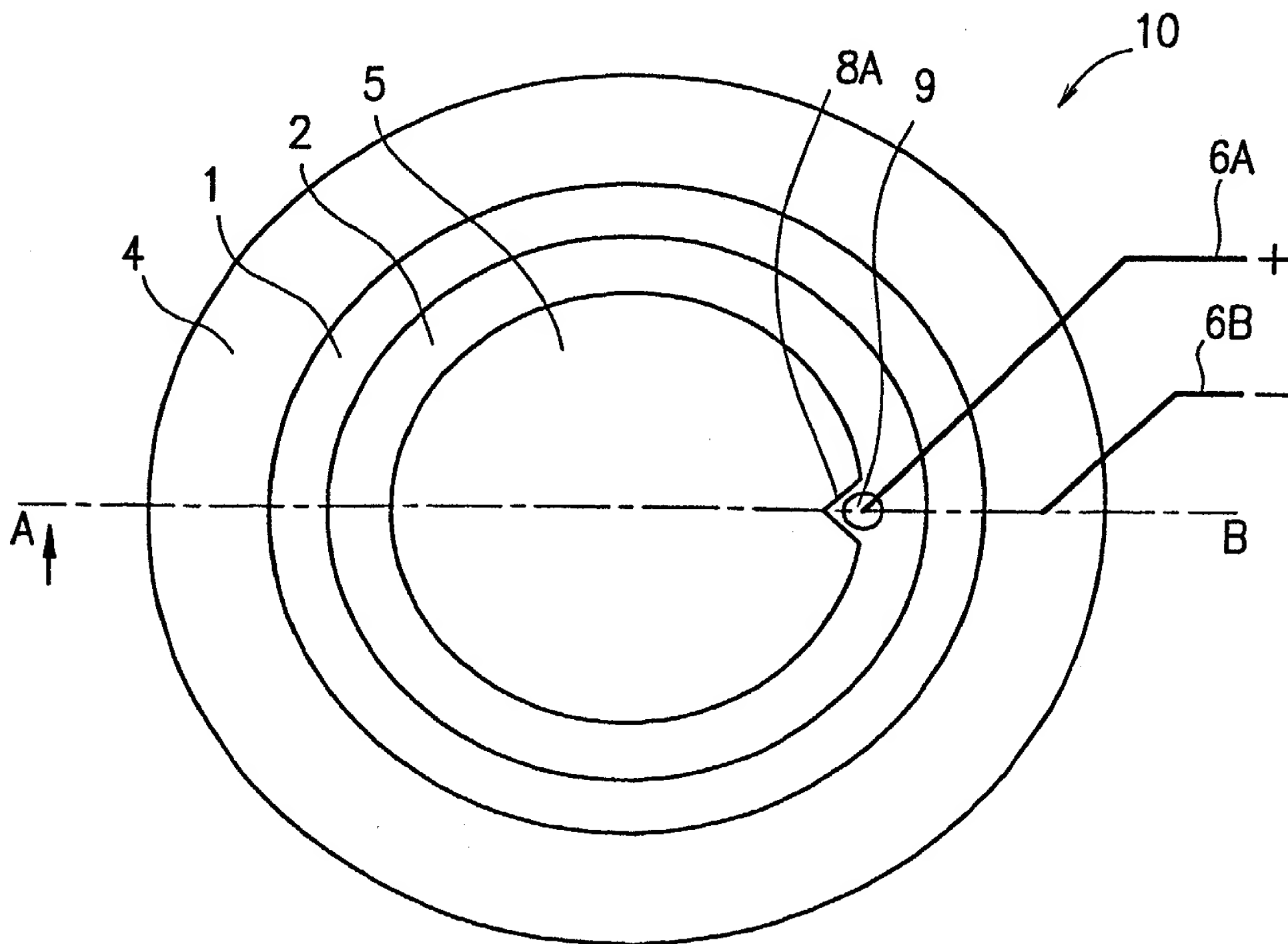


FIG. 20

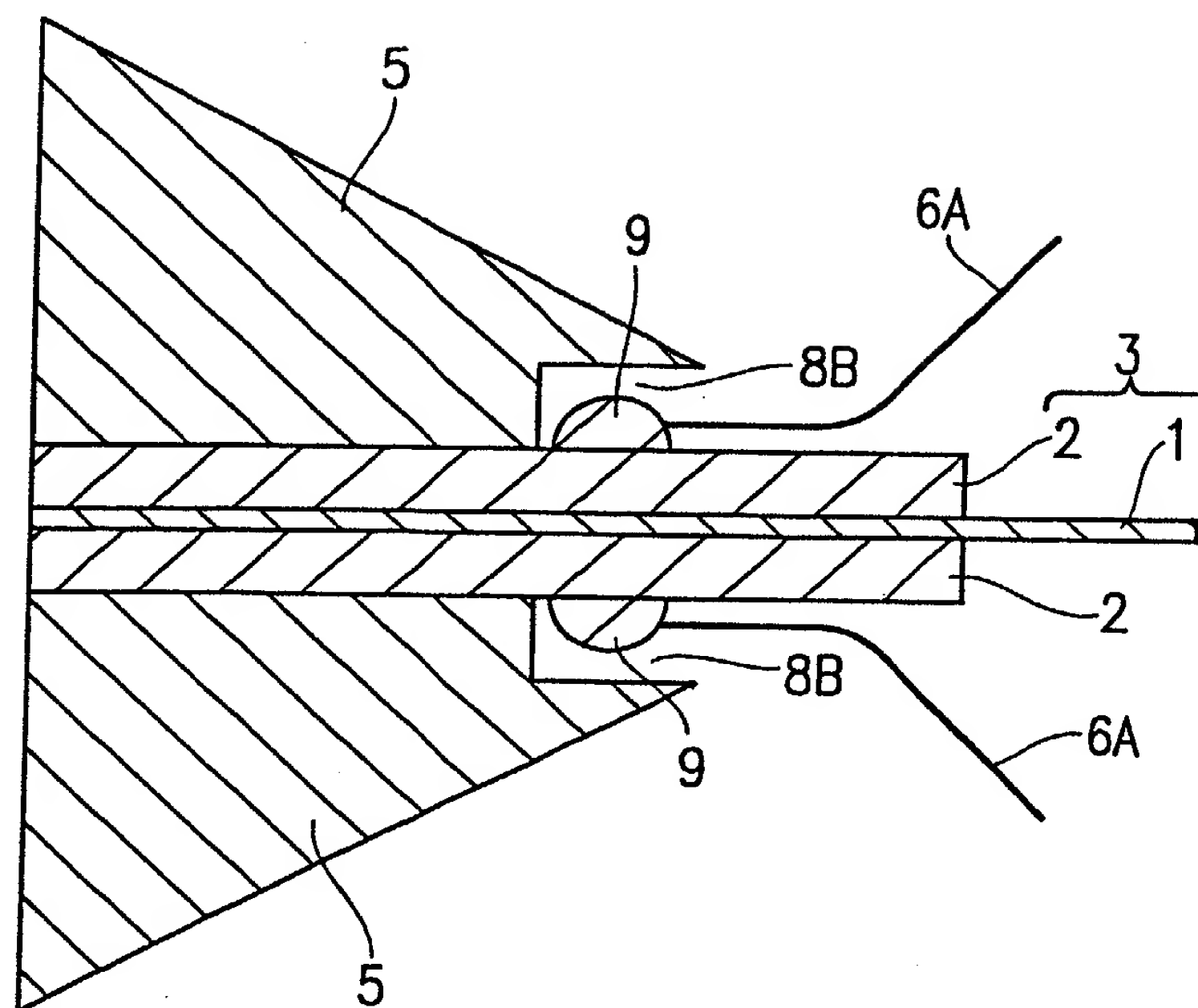
[illegible]

FIG. 21

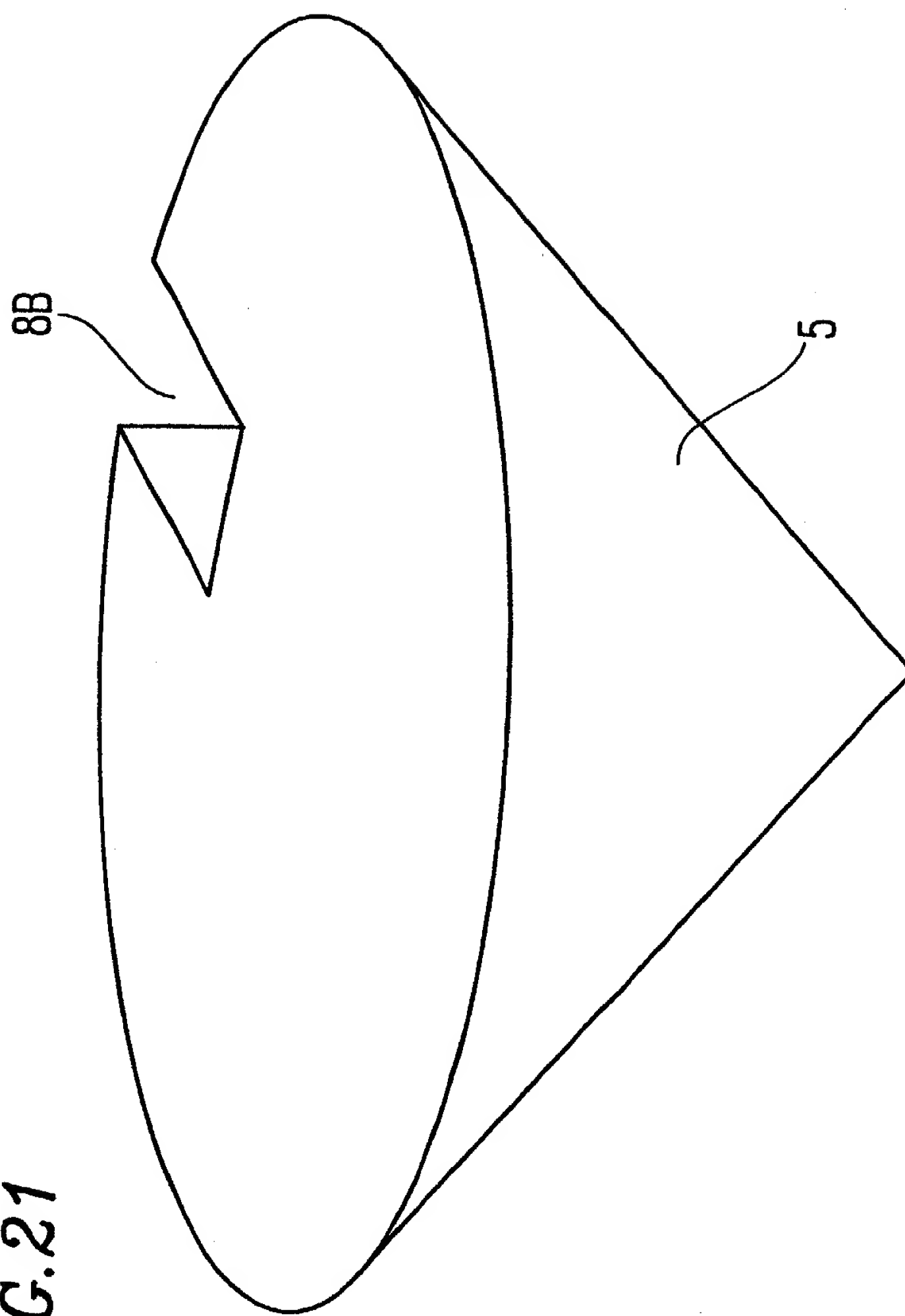


FIG. 22

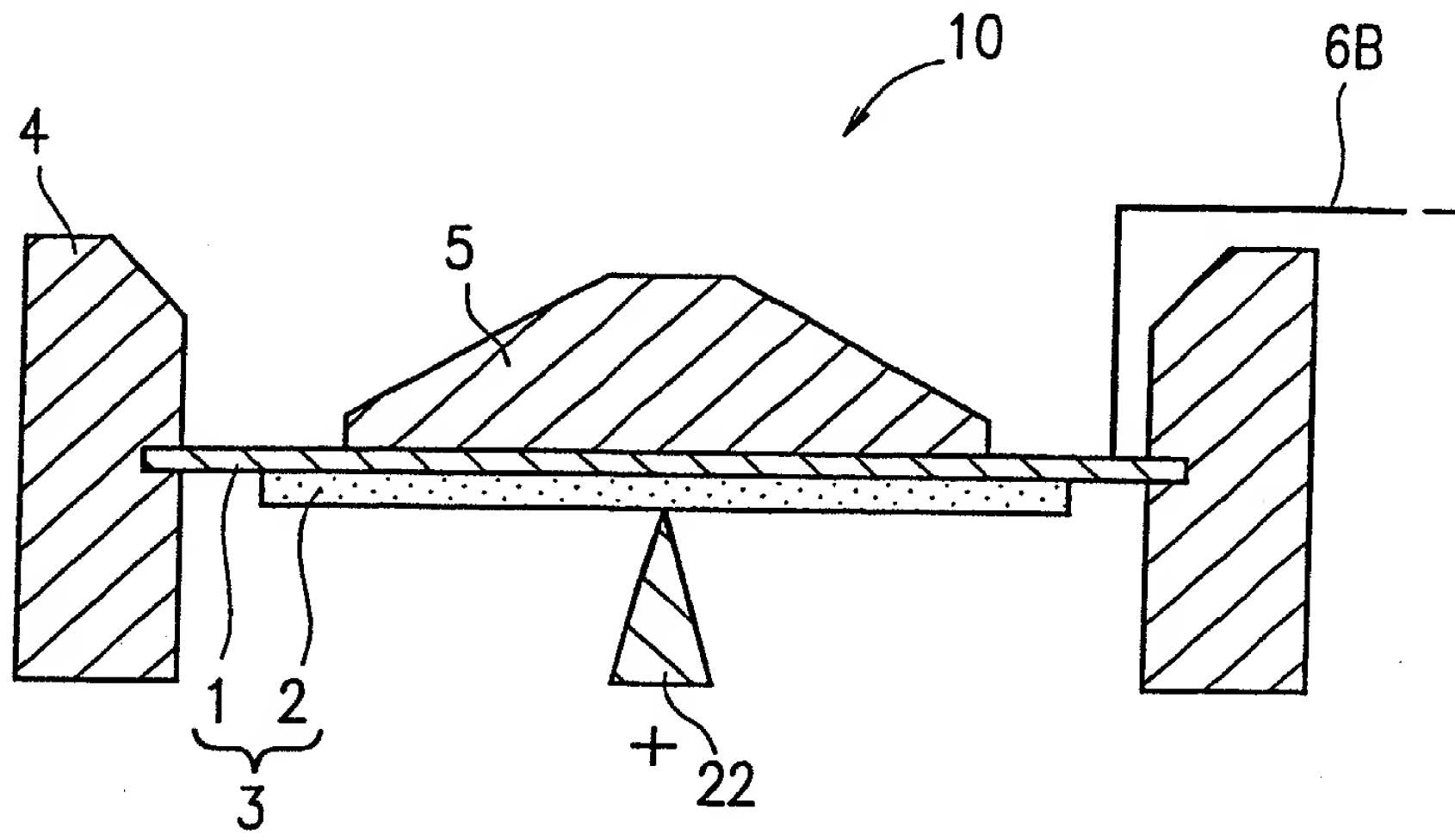
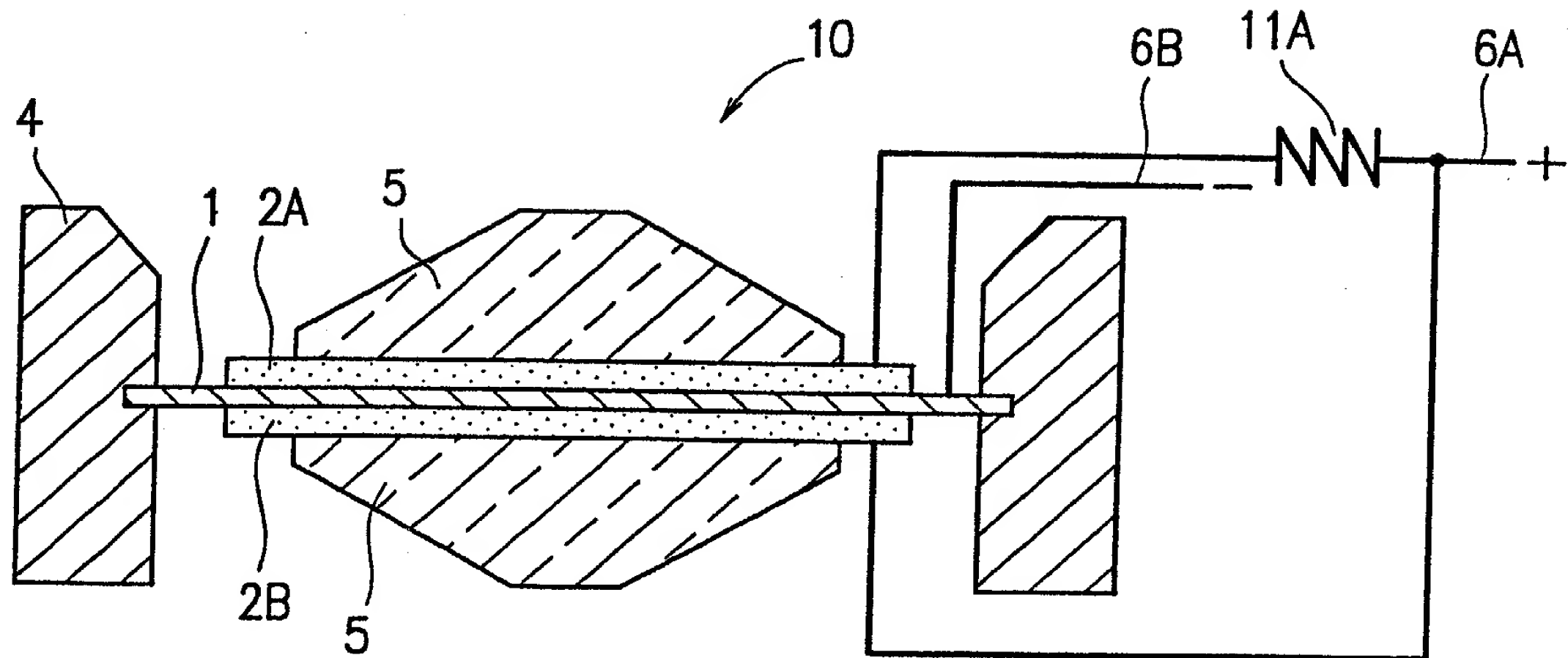


FIG. 23



P21560-FIG. 23

FIG. 24

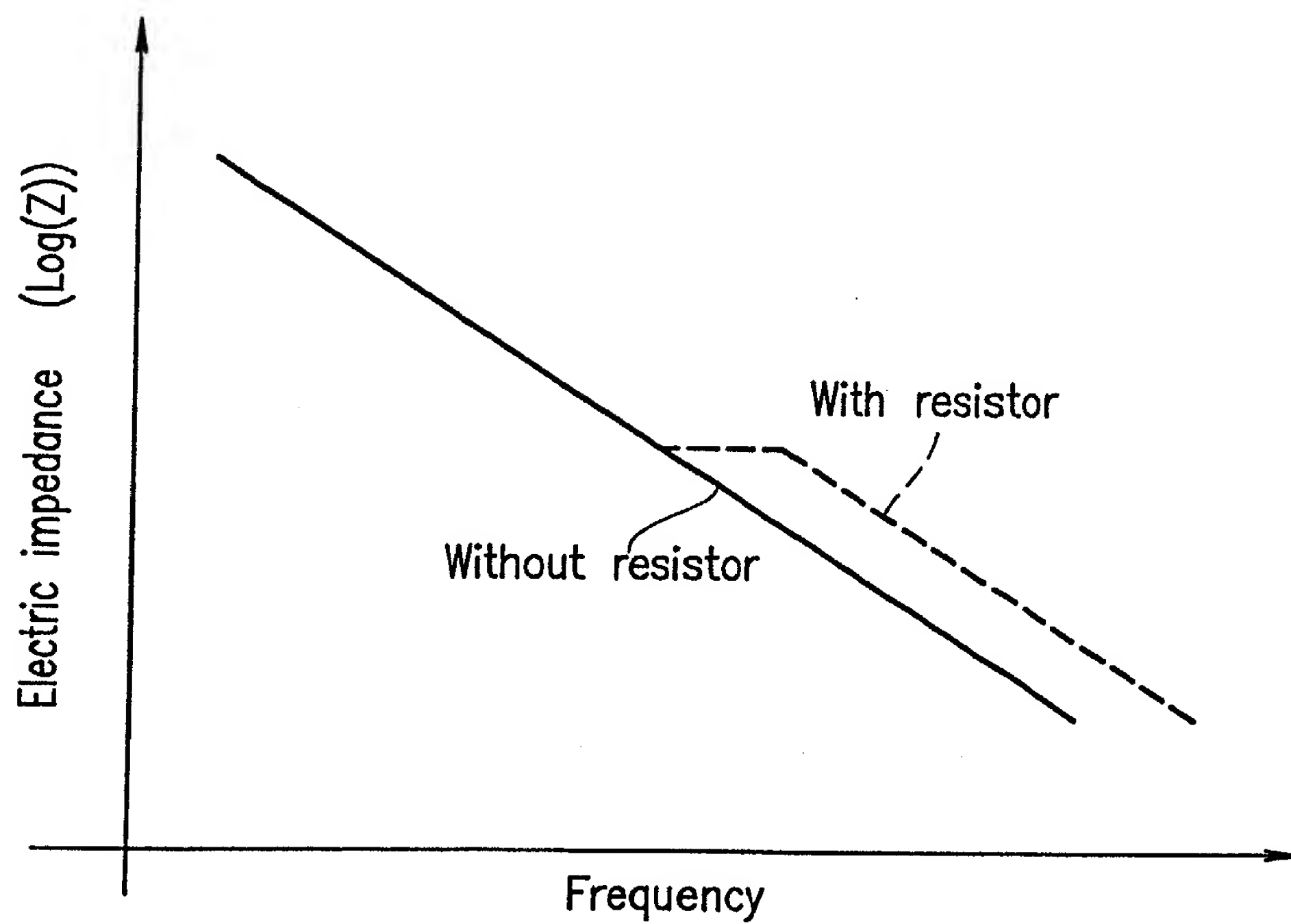
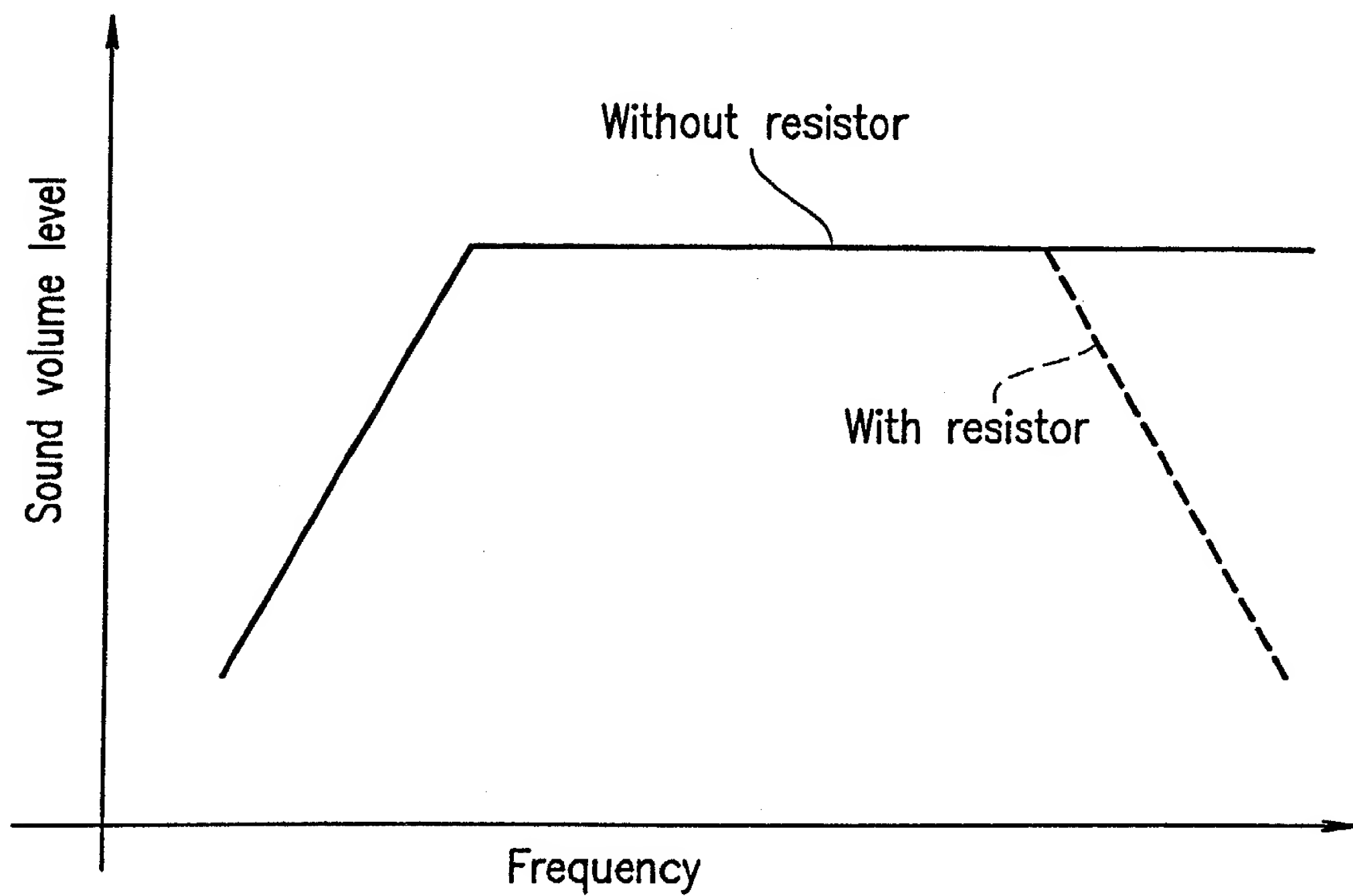


FIG. 25



044304 10109  
66T0T 102460



FIG. 26

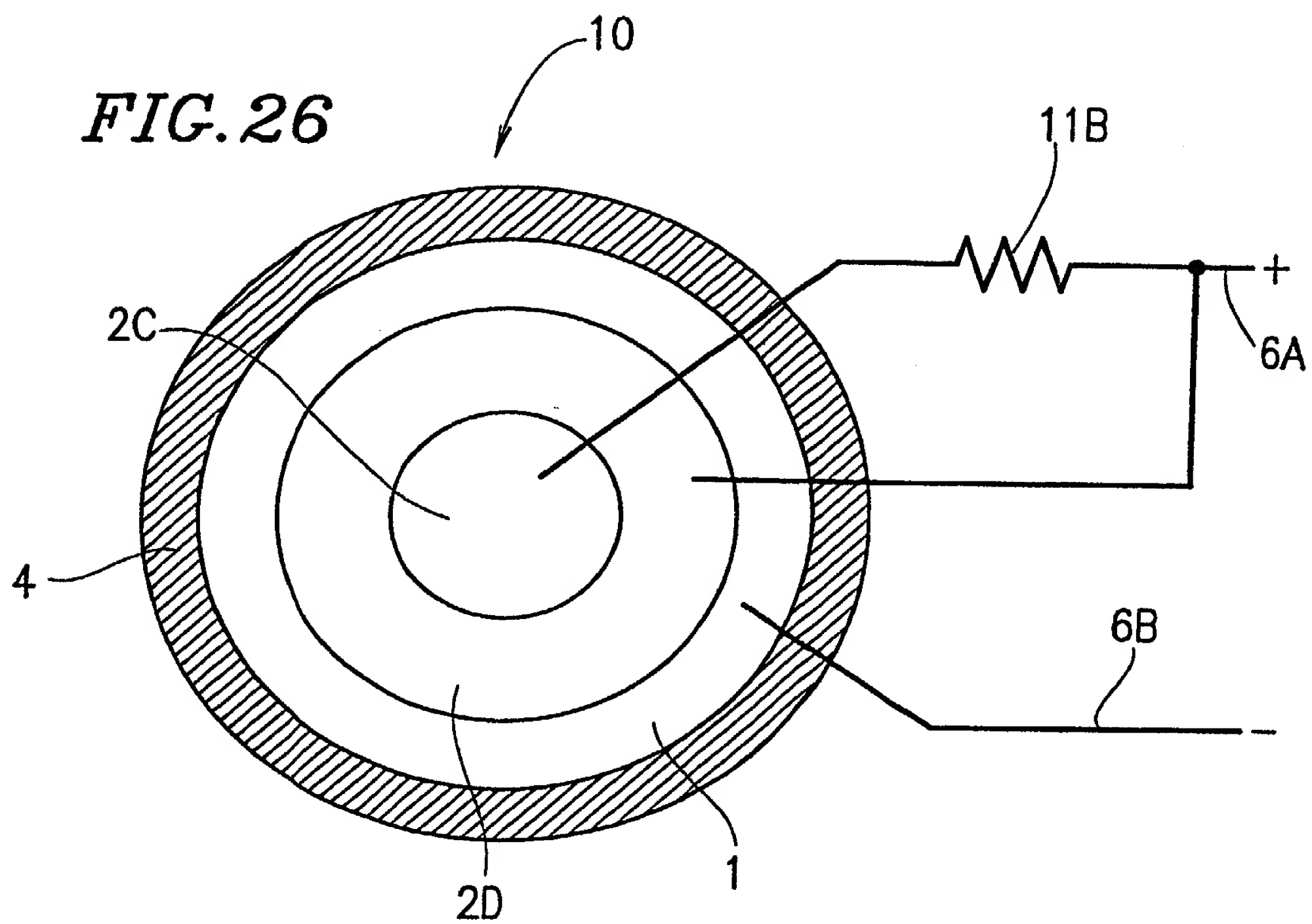
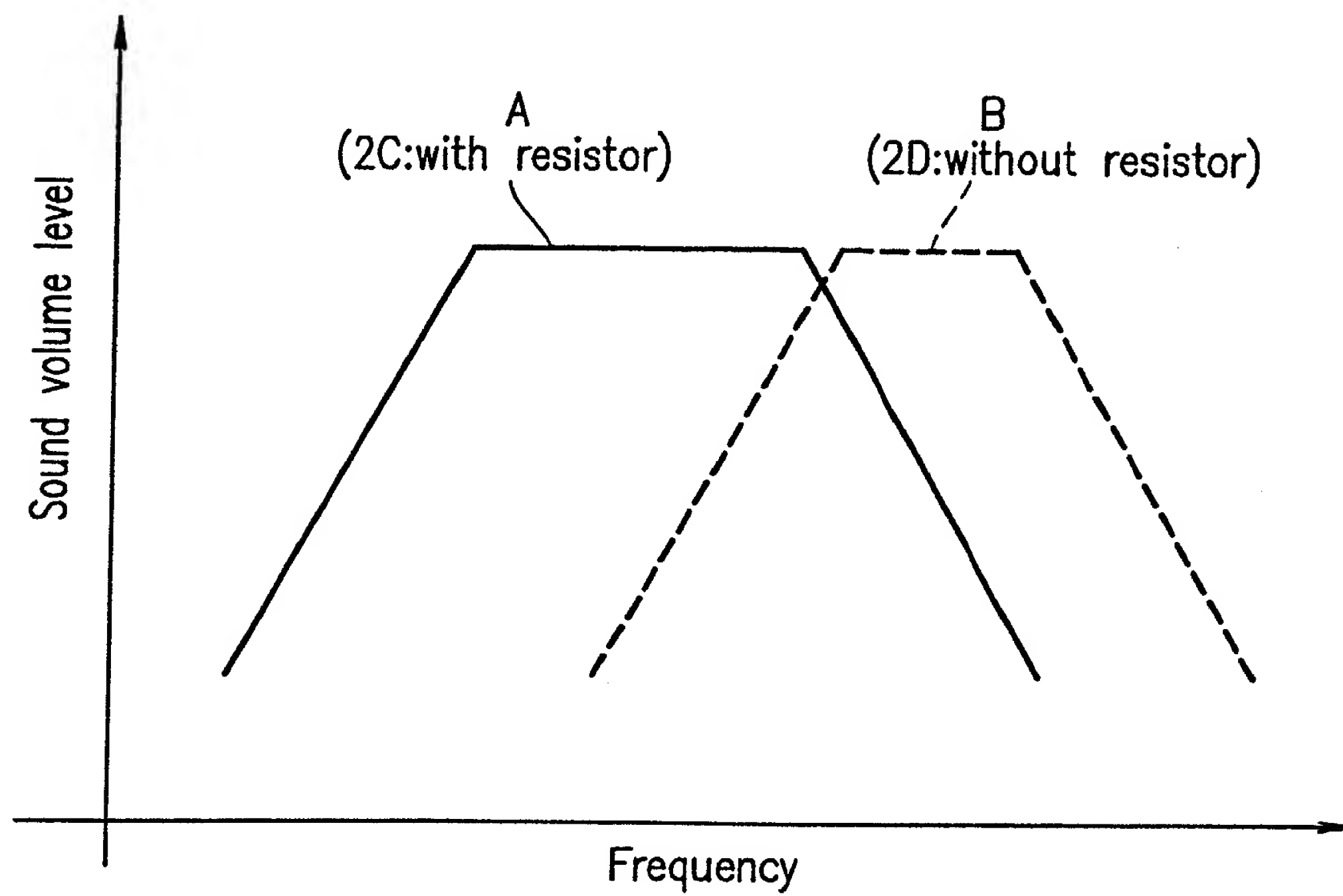
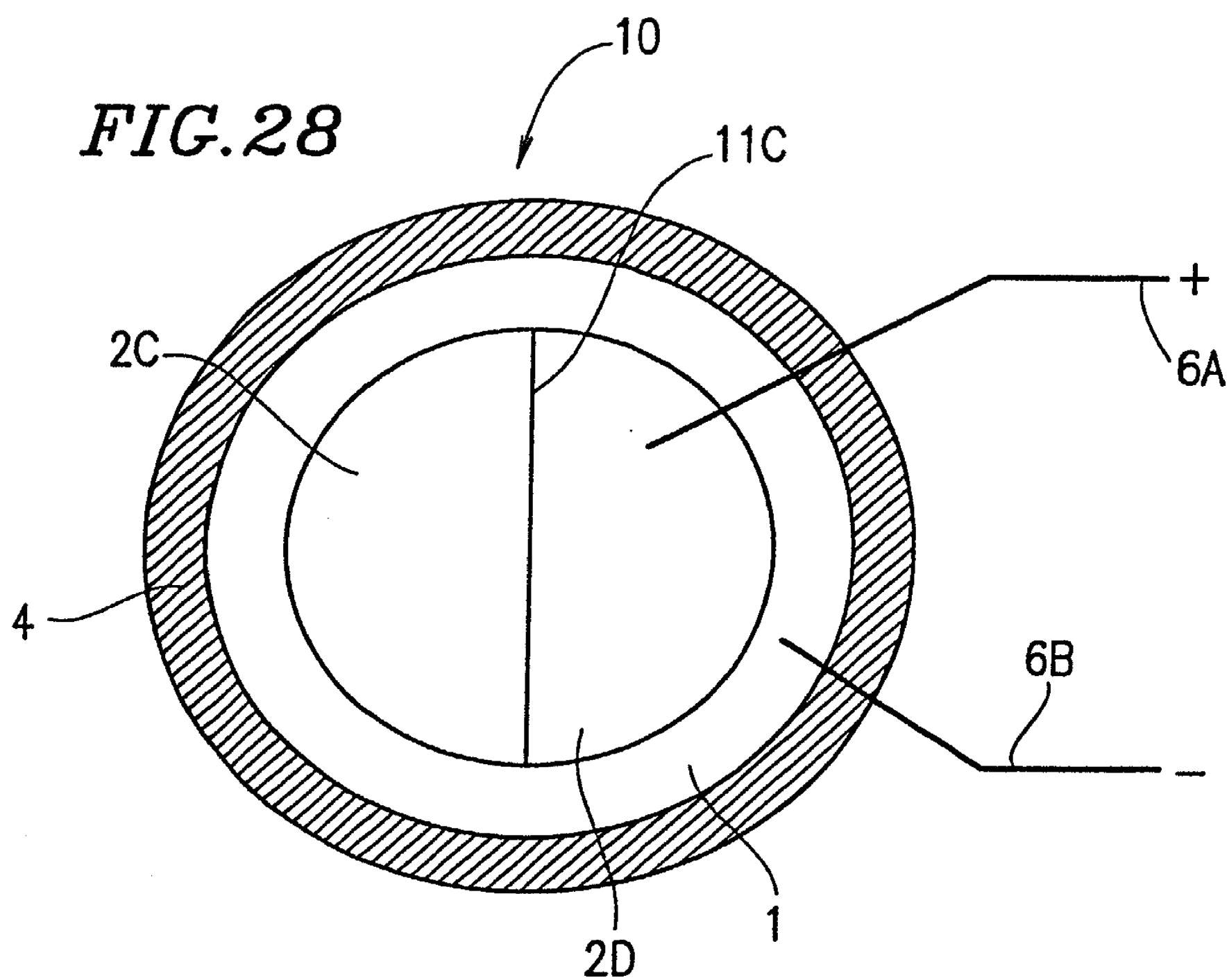


FIG. 27



**FIG. 28**



0944201 110199



FIG. 30

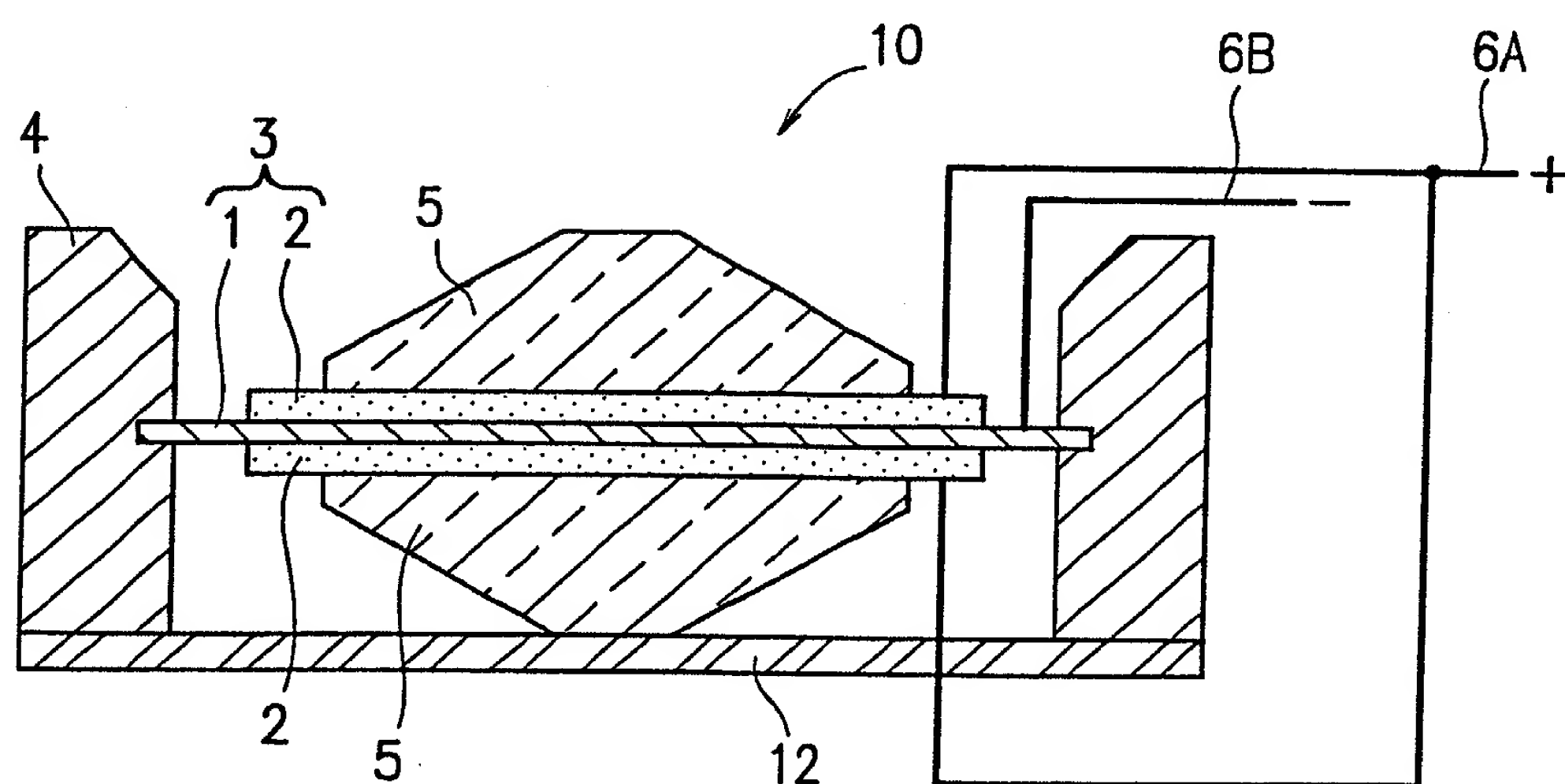
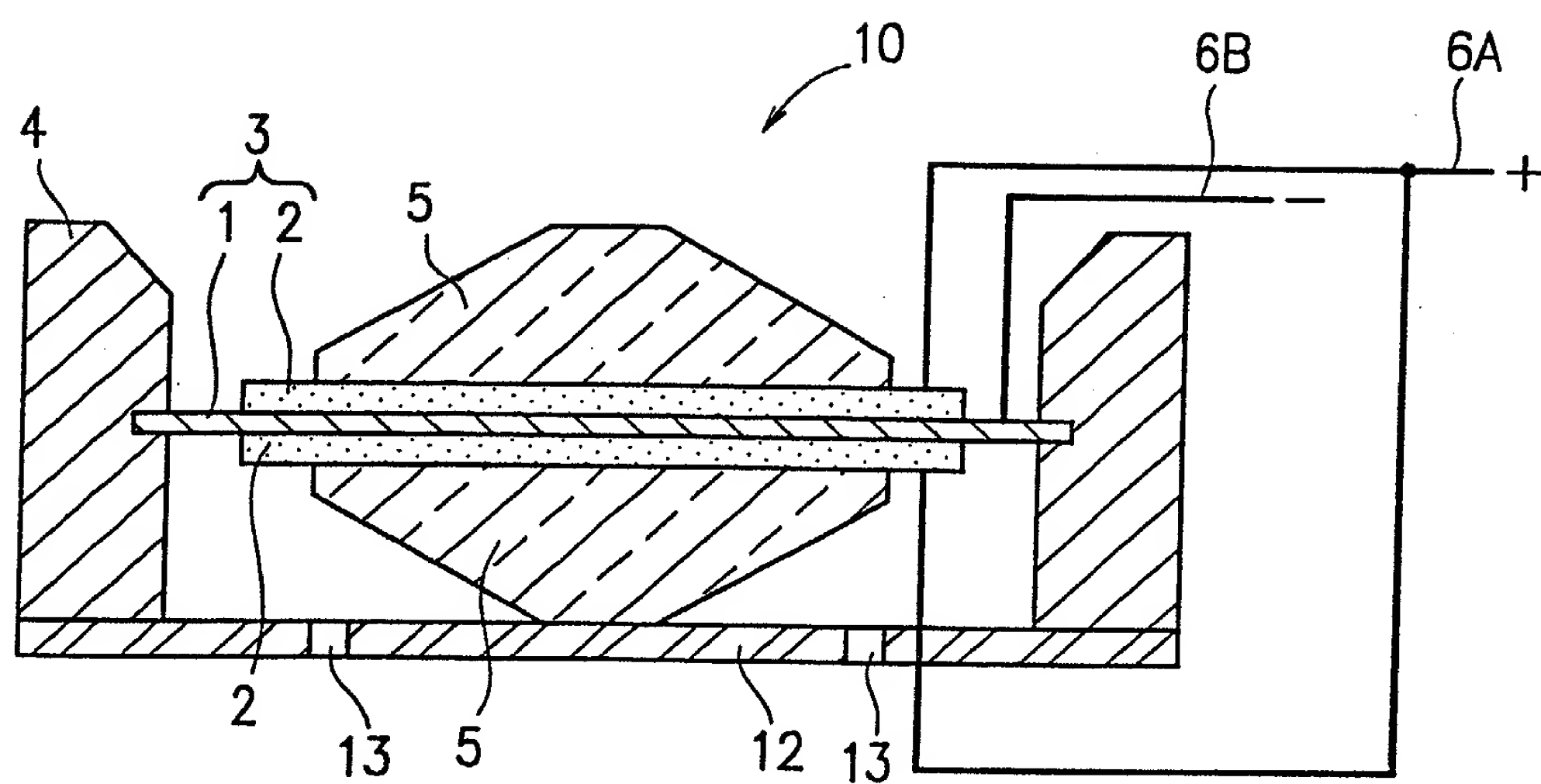


FIG. 31



09444-102160

FIG. 32

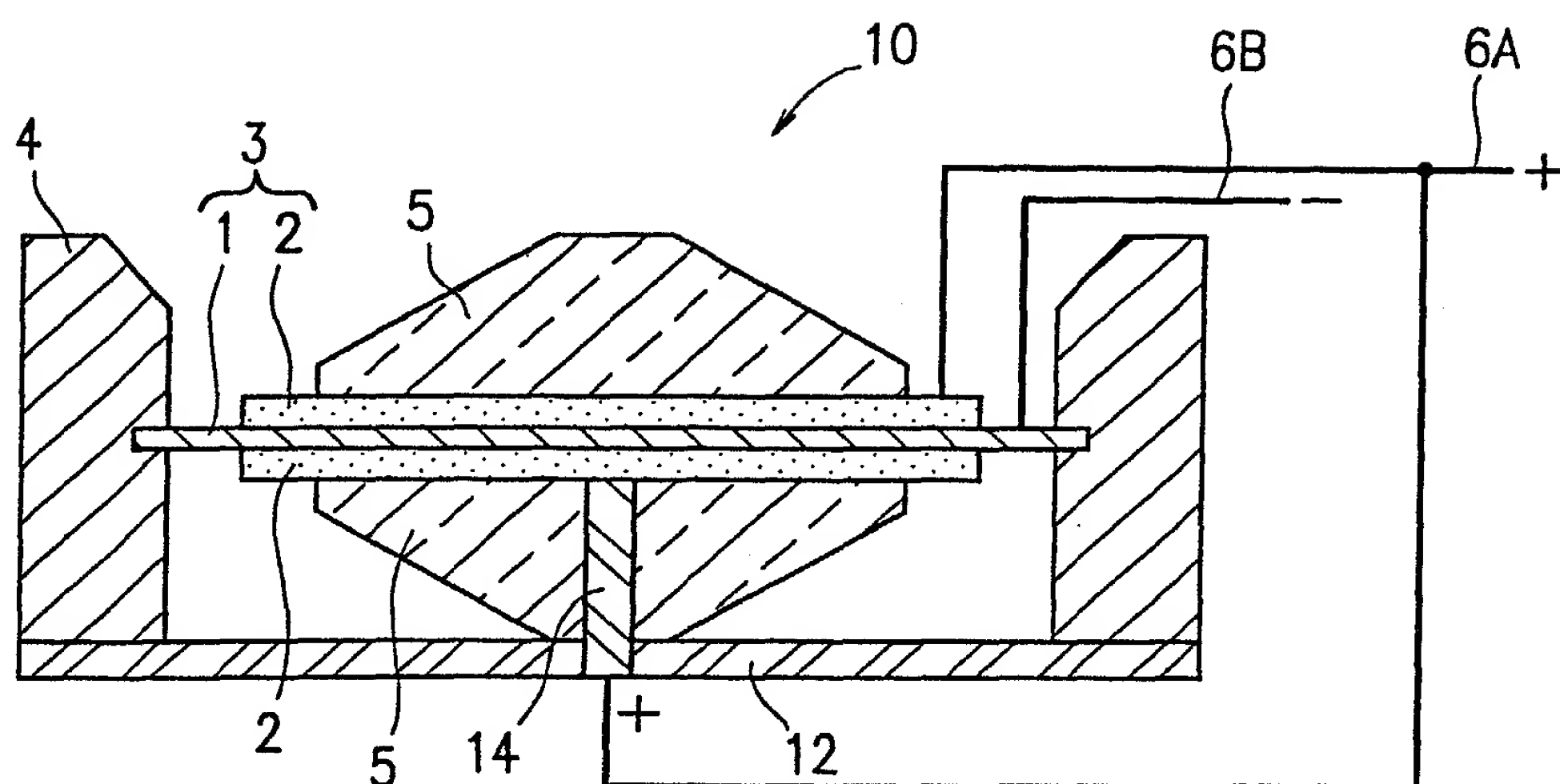


FIG. 33

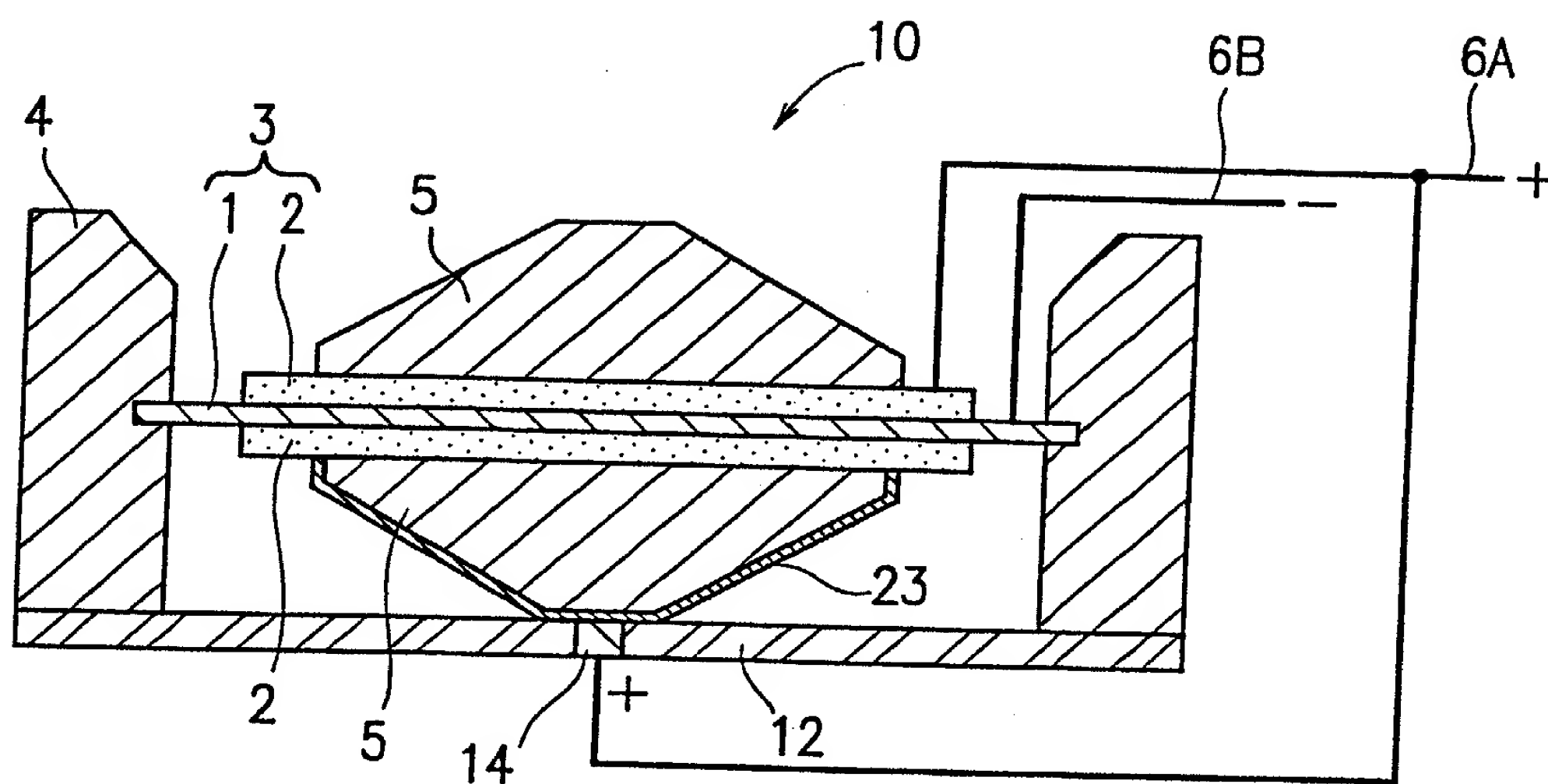




FIG. 34A

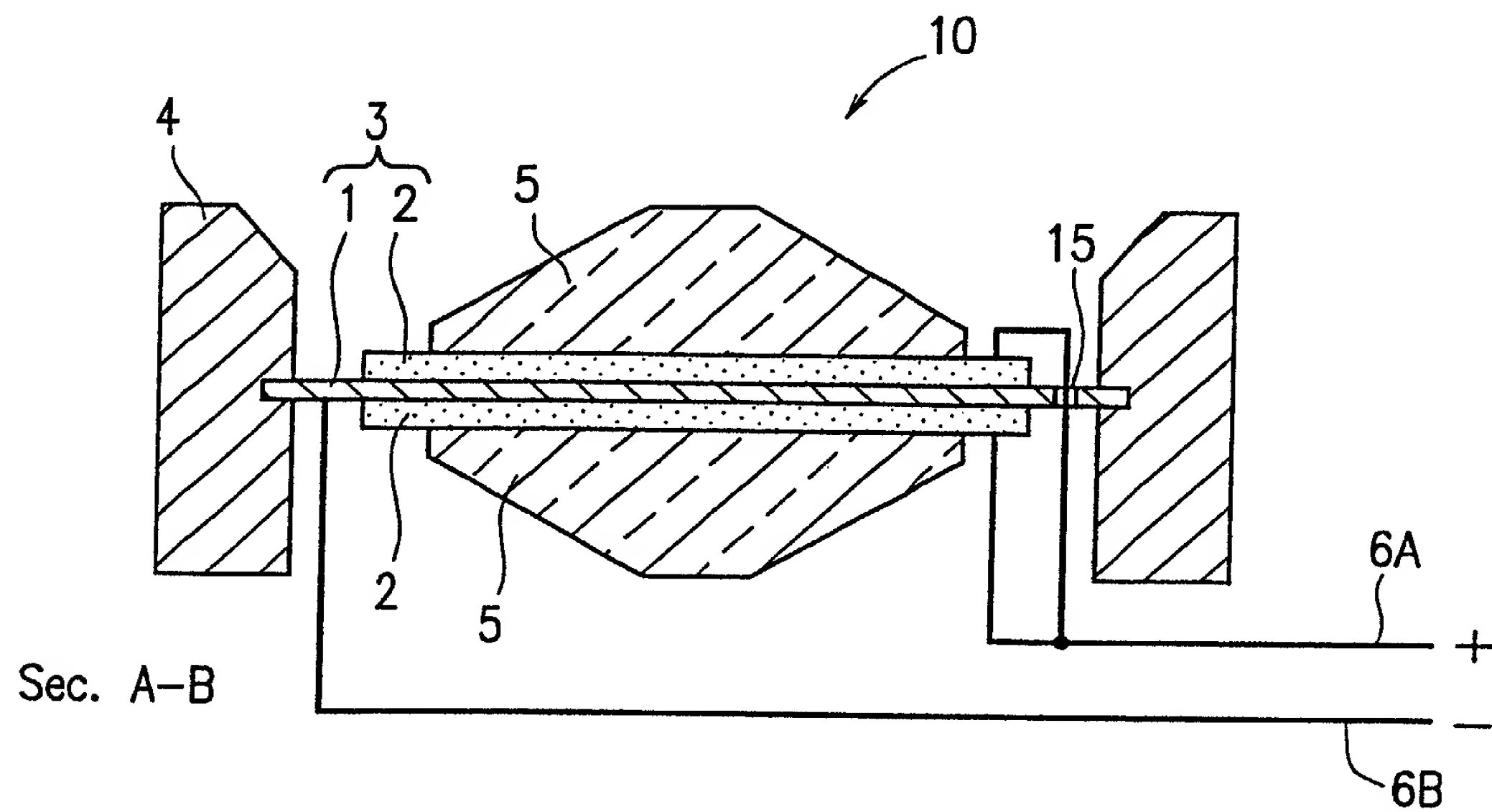
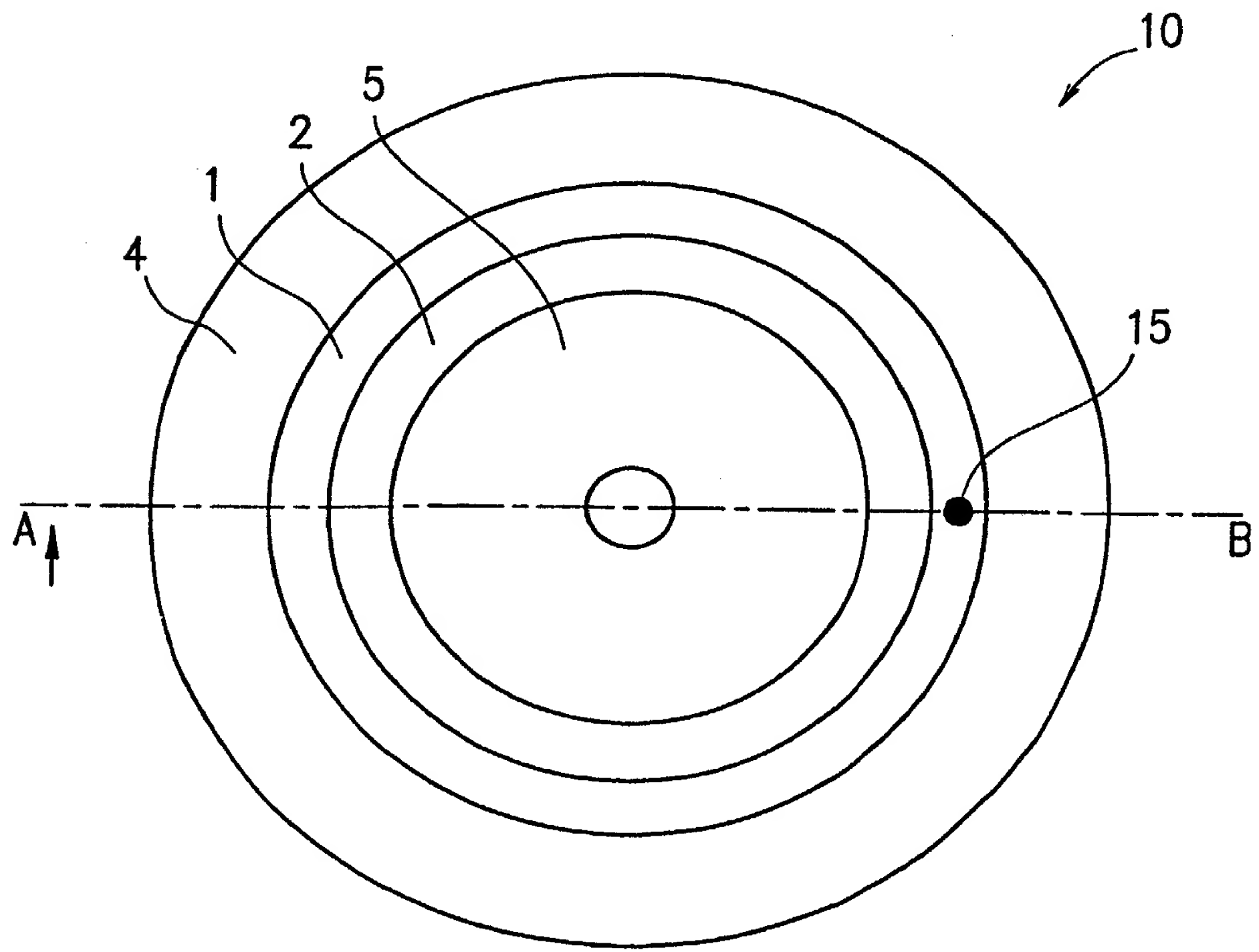


FIG. 34B



664077-1027460

FIG. 35A

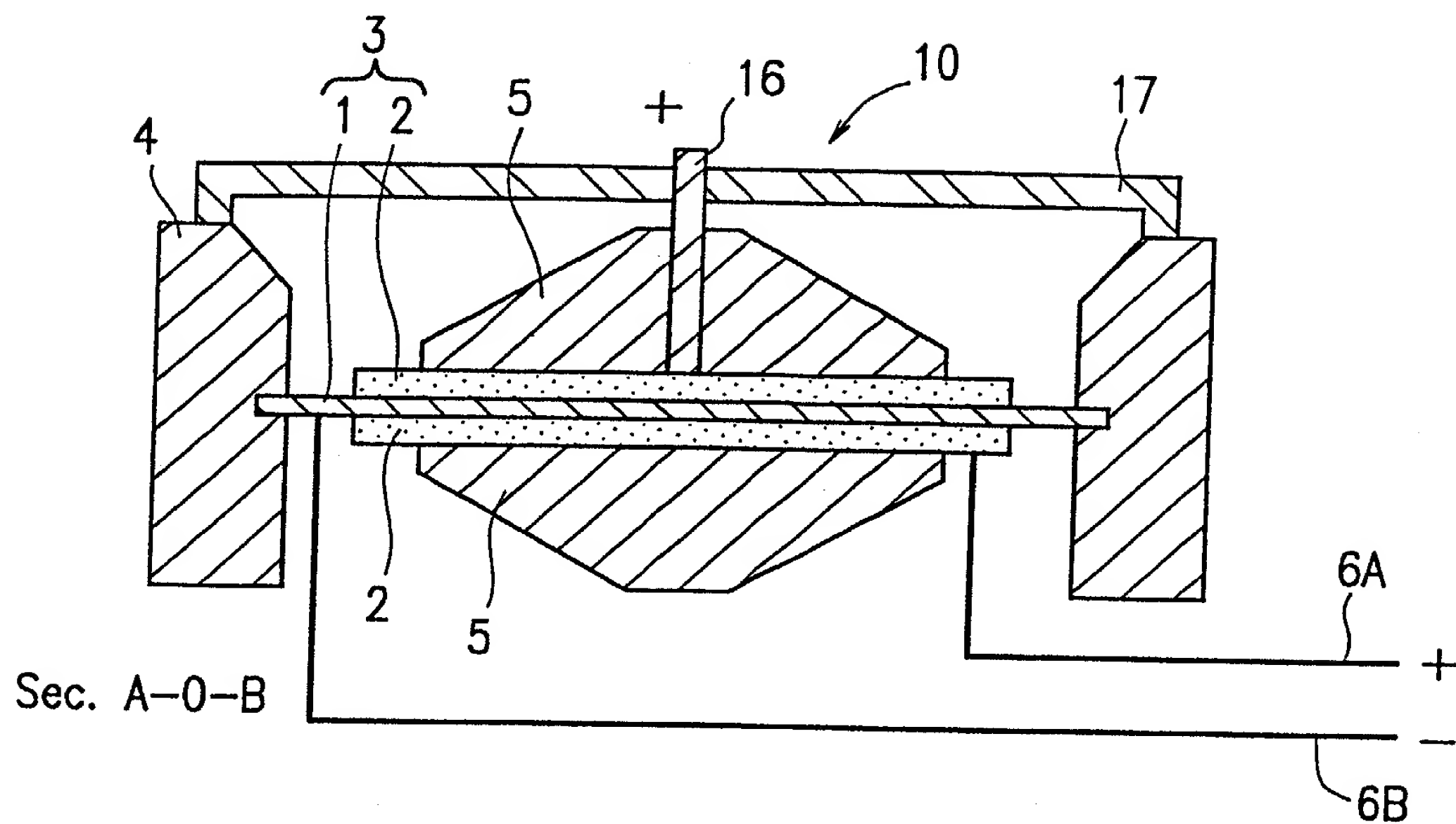


FIG. 35B

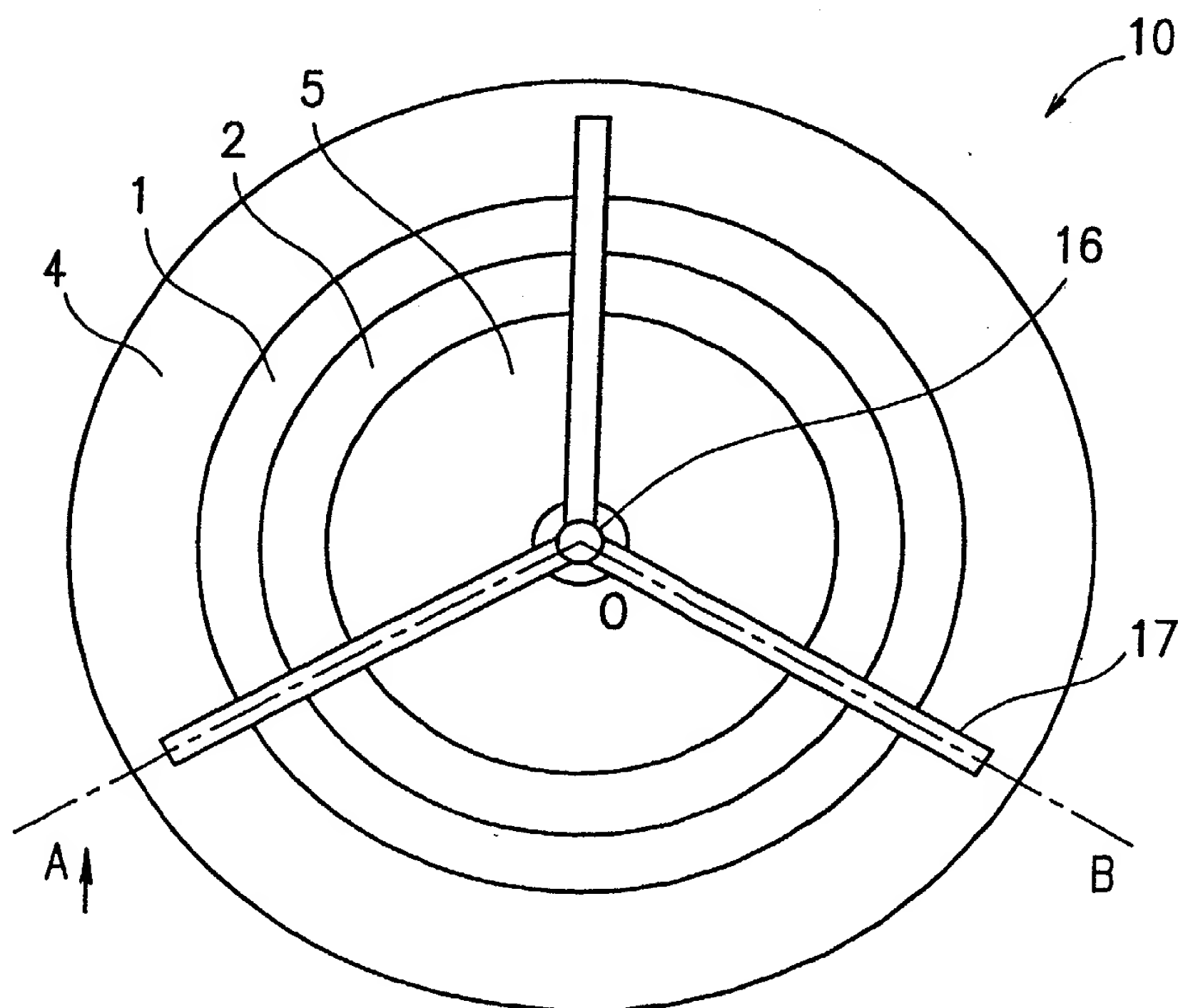


FIG. 36A

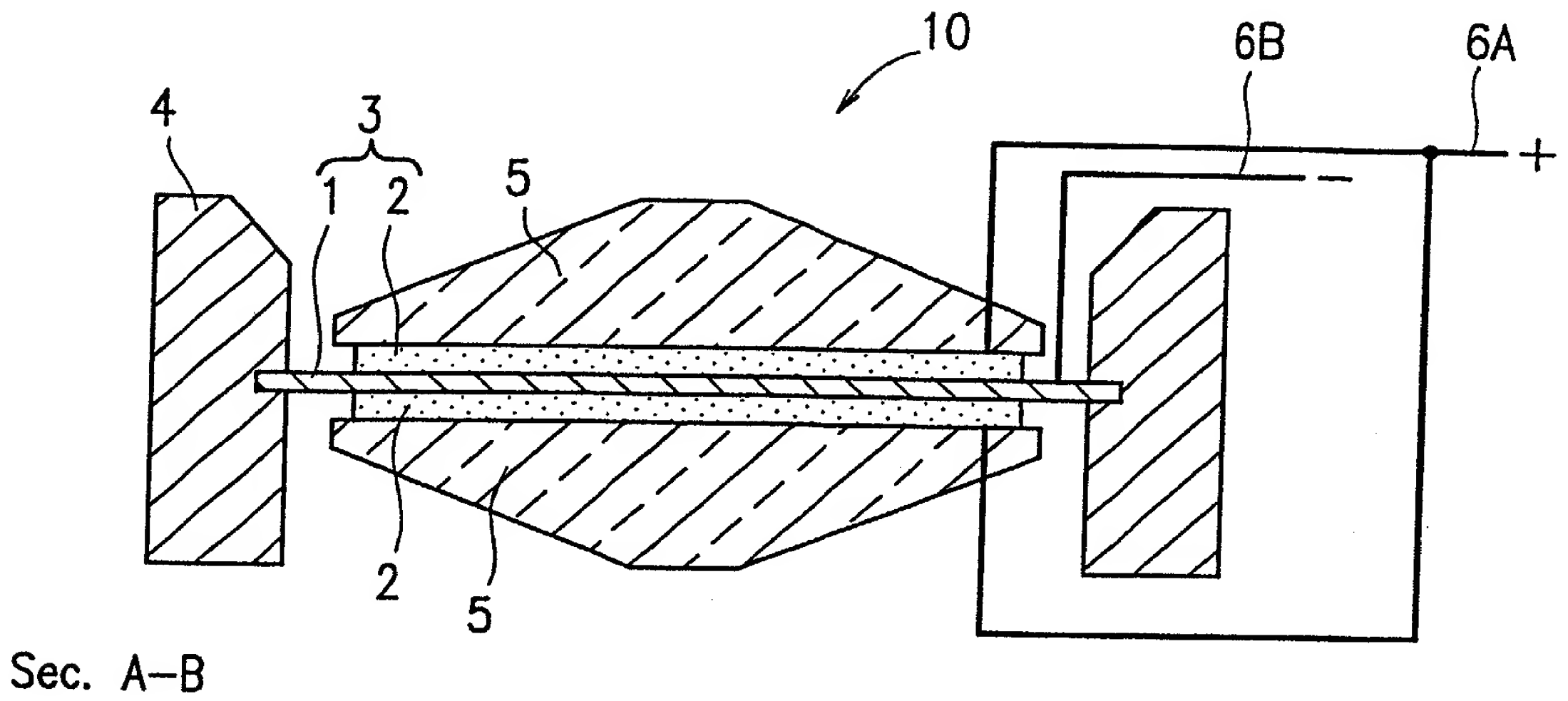


FIG. 36B

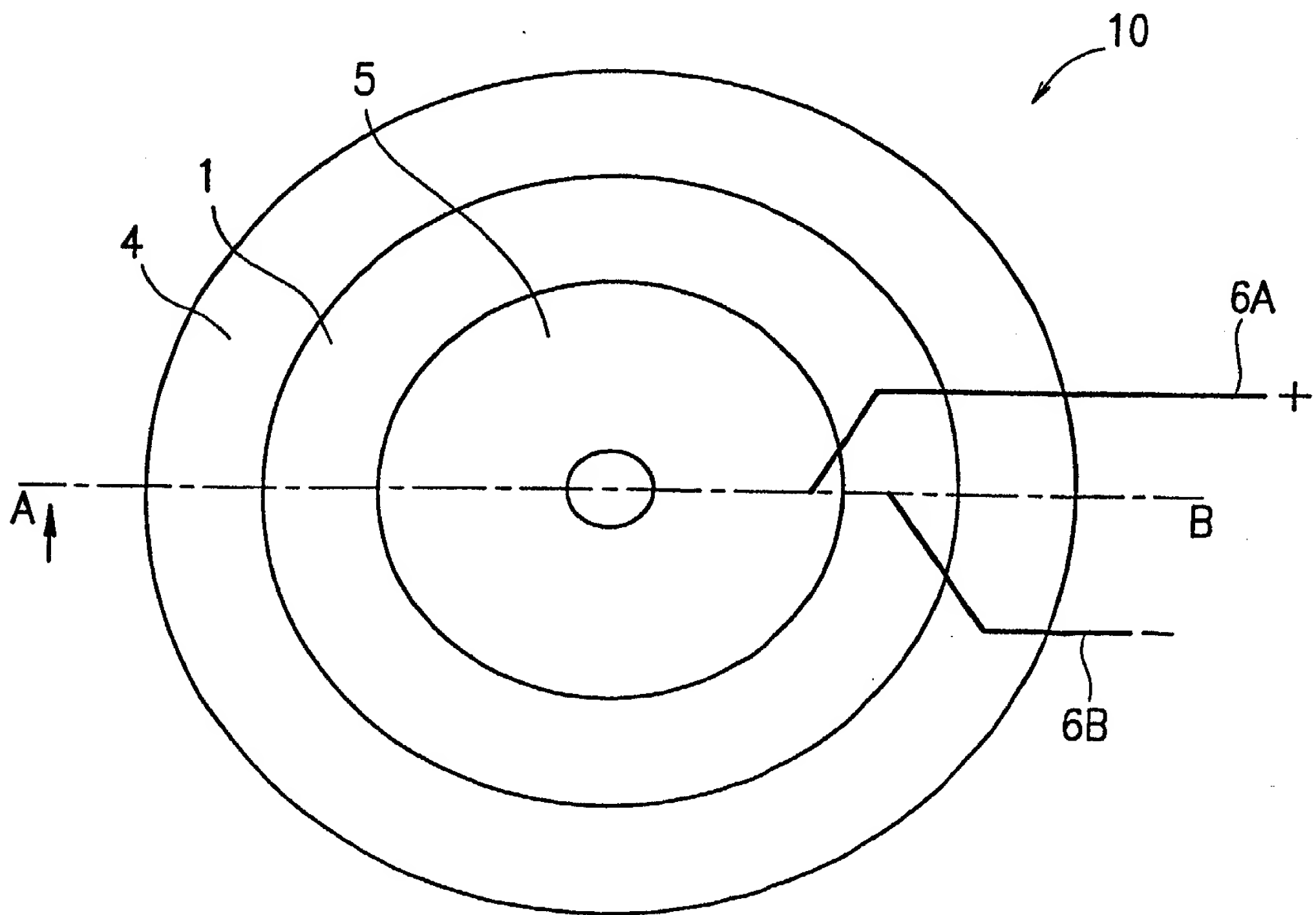


FIG. 37

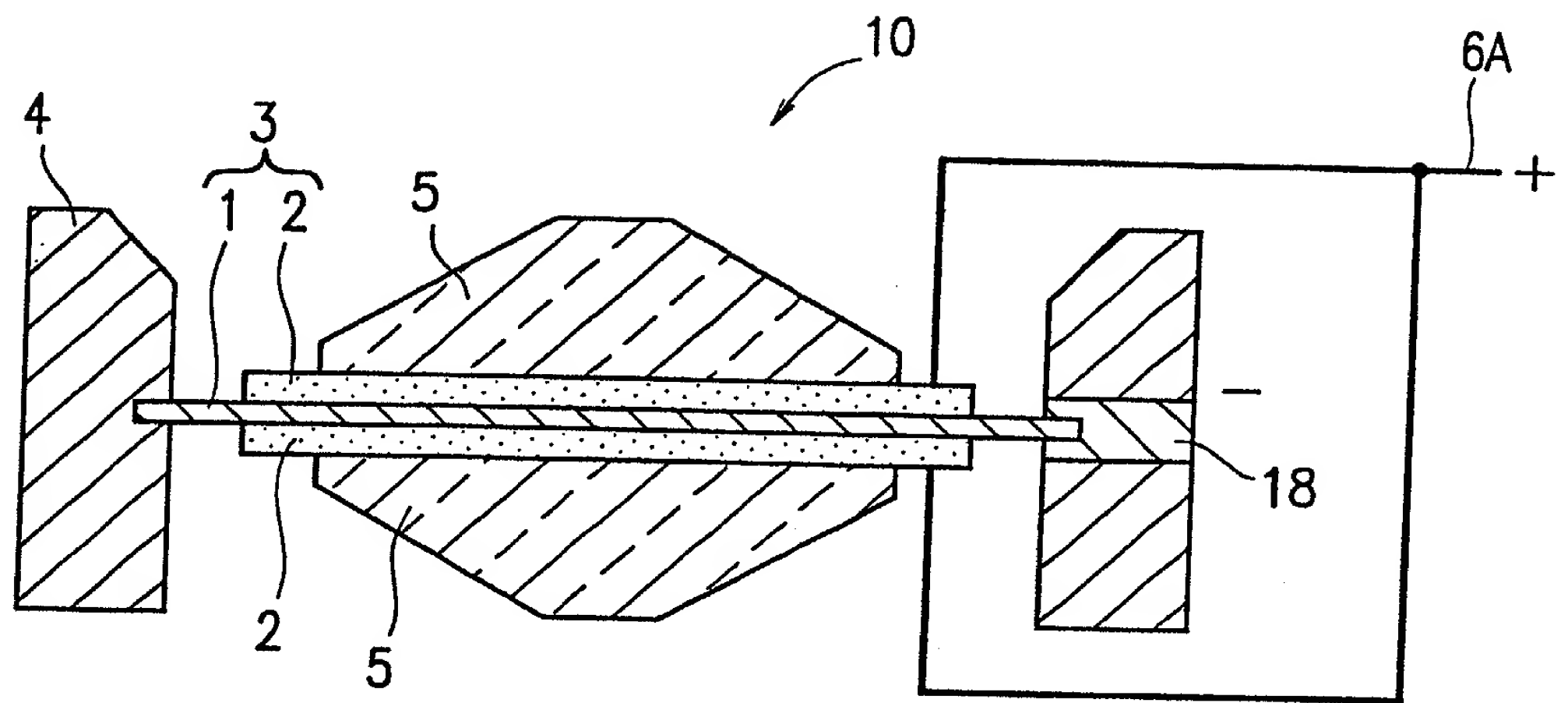


FIG. 38

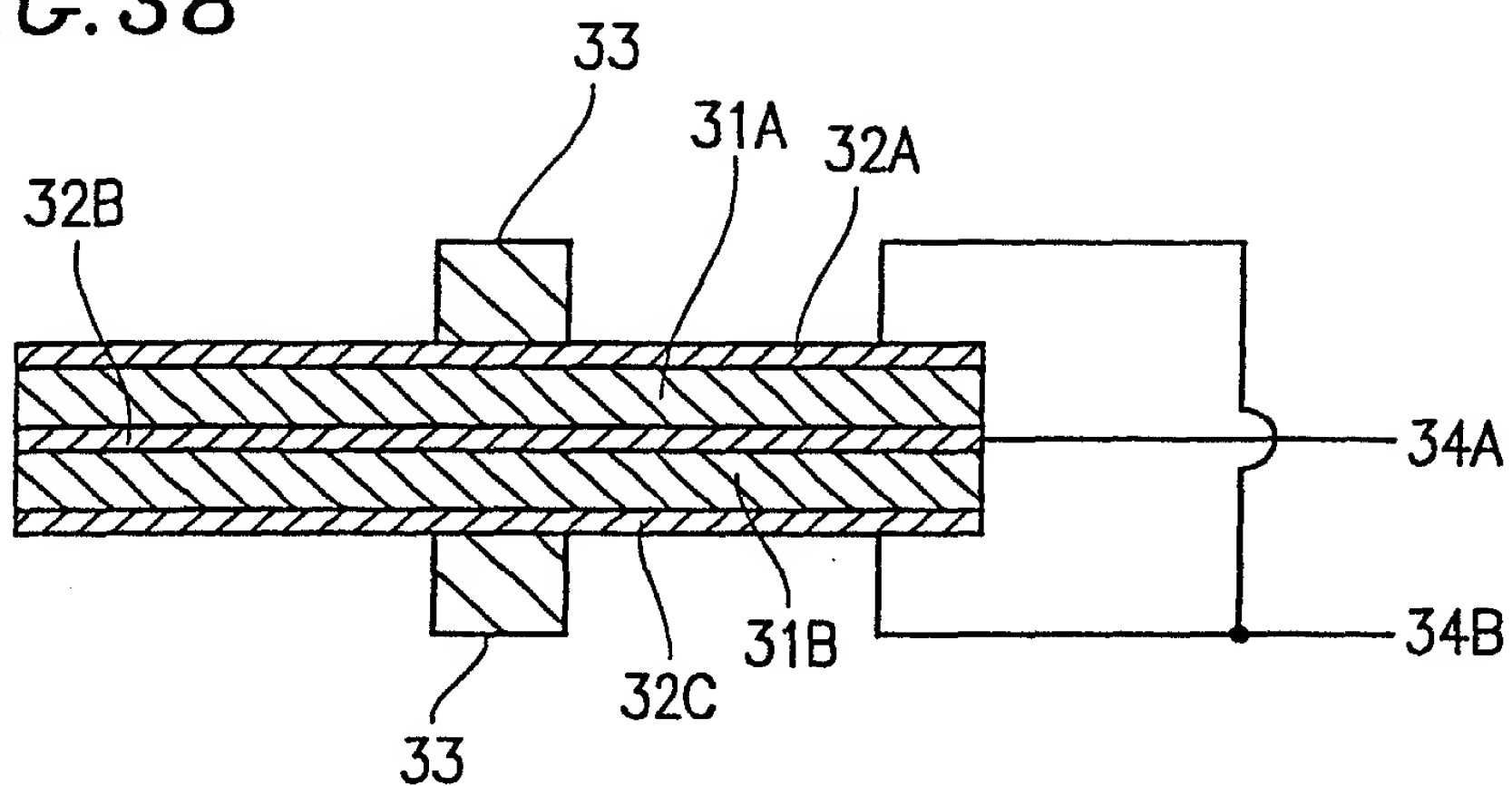


FIG. 39

